

## **Substitute Specification**

## ELECTRONIC BILL PRESENTMENT SYSTEM WITH CLIENT SPECIFIC FORMATTING OF DATA

## **BACKGROUND OF THE INVENTION**

- 7    1. The present invention relates to a financial transaction system and method, and  
8       more particularly, to a network-based system and method for billing and  
9       payment.

10    2. Recently, there has been an increase in the popularity of performing financial  
11       transactions using the Internet as a centralized network for linking the individual  
12       financial systems of a plurality of entities transacting business with one another.  
13       With the recent explosion in e-commerce, the increasing acceptance of the  
14       Internet as a less expensive and more efficient way of doing business, and the  
15       advent of new server technology and sophisticated online security systems,  
16       Internet-based financial transactions are becoming ever more common.  
17       Advantageously, an Internet-based financial transaction system for bill  
18       presentment and payment may reduce many of the transaction costs  
19       associated with other financial transaction systems, such as preparation costs,  
20       banking fees, and costs for clearing, reconciling and closing. Moreover, such a  
21       transaction system may seamlessly handle transactions from virtually any entity  
22       with Internet access, regardless of the nature of the business, geographic  
23       location, size, or trading currency, even those entities for which the costs of  
24       traditional invoicing, presentment and payment have traditionally been high.

25    3. Traditionally, invoice presentment and bill payment procedures have required a  
26       capital outlay for the equipment to prepare and distribute each invoice, as well  
27       as collect and reconcile payment of the invoice. Additionally, there are costs  
28       and collection delays associated with the multiple steps required between  
29       multiple parties to effect invoice presentment and bill payment. Such steps may  
30       include the payee's preparation and distribution of invoices by mail (which may  
31       take up to a week to reach payers) or electronically; one or more invoice

1 approvals by individuals or departments within the payer's organization (e.g. a  
2 purchasing manager); invoice adjustment or dispute by other individuals or  
3 departments; payment authorizations by other individuals or departments;  
4 payment issuance, either electronically or by issuance of a paper instrument,  
5 such as a check, (again, typically by mail); receipt of payment at the payee's  
6 side, either by the payee, the payee's bank, a lockbox, or other payment receipt  
7 entity; and processing of the payment either at the payee's bank, at the payee's  
8 accounts receivable, or both. This entire process may take several weeks, and  
9 requires separate accounting records to be kept and harmonized at both the  
10 payer's (accounts payable) and payee's (accounts receivable) sides, and/or  
11 within other decentralized record keeping systems.

- 12 4. There are further costs and collection delays associated with any adjustments  
13 to the invoice that may be made by either the payer or the payee. When an  
14 adjustment is made within one record keeping system, the adjustment must be  
15 communicated to the other system(s) so that a corresponding adjustment can  
16 be made. For example, an invoice adjustment made by the payer results in the  
17 payer's entry of an adjusted invoice amount into its accounts payable, as well  
18 as the payer's mailing a copy of a manually-adjusted invoice to the payee, so  
19 that the payee can update its accounts receivable.

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## 21 SUMMARY OF THE INVENTION

- 22 5. A first aspect of the present invention is to provide an electronic bill  
23 presentment and payment system. The system comprises a billing database  
24 for storing billing data related to a plurality of bills. Each bill represents an  
25 amount payable to a billing client from a paying client. An application server  
26 receives a plurality of instruction files, each representing a transaction for  
27 reading and manipulating billing data, performs the transaction utilizing data  
28 included in the instruction file, and provides a data response file complying with  
29 a predetermined format. A presentation server is coupled to the application  
30 server and includes a document database comprising a plurality of document

1 style sheets. Each style sheet represents a format for the response data in a  
2 predetermined document format corresponding to one of the clients. The  
3 presentation server receives the response file and generates a client document  
4 utilizing data extracted from the response file and the document style sheet  
5 corresponding to the client. More specifically, the style sheet utilized by the  
6 presentation server may be a style sheet associated with the billing client  
7 associated with the transaction.

8 6. The document style sheet may include a plurality of document fields and the  
9 presentation server may populate each document field by matching data from  
10 the data response file to populate the document field. More specifically, the  
11 data response file may comprise a plurality of data fields and a plurality of  
12 predetermined tags, each tag identifying one of the plurality of data fields and  
13 the presentation server may utilize a tag to identify data for inclusion in the  
14 client document. Further, one of the predetermined tags may identify a data  
15 field which identifies the billing client associated with the transaction and the  
16 presentation server may utilize the data field which identifies the billing client to  
17 select a document format for presenting the response data to the client.

18 7. The data response file comprises an XML message and the client document  
19 may be an HTML document.

20 8. In another aspect of the present invention, the presentation server may further  
21 receive transaction request files from each of the biller clients and payor clients  
22 and generate the instruction file in response thereto. The transaction request  
23 files from each of the biller clients and the payor clients may be HTTP posts and  
24 the instruction file may be an XML message.

25 9. Yet another aspect of the present invention is to provide a method of providing  
26 electronic bill presentment and payment services to a plurality of billing clients  
27 and a plurality of paying clients. The method comprises receiving an invoice file  
28 from each of the plurality of billing clients and populating a billing database with  
29 data from each invoice file. The invoice file representing amounts payable to  
30 the billing client from at least one paying client. The method further comprises

1 receiving an instruction file from a client representing a transaction for reading  
2 or manipulating data in the billing database, performing the transaction utilizing  
3 data included in the instruction file, generating response data, and providing a  
4 client response document comprising the response data in a specified  
5 document format corresponding to the client.

6 10. The specified document format may be defined by a style sheet which includes  
7 a plurality of document fields and the step of providing the client response  
8 document may comprise populating each document field by matching data from  
9 the response data to a document field. More specifically, the response data  
10 may comprise a plurality of data fields and a plurality of predetermined tags,  
11 each tag identifying one of the plurality of data fields and the step of populating  
12 each document field comprises matching the field to a tag identify data for  
13 inclusion within the document field.

14 11. Further, one of the predetermined tags may identify a data field which identifies  
15 the billing client associated with the transaction and the step of providing a  
16 client response document may comprise identifying the billing client and  
17 selecting a document format associated with the billing client for providing the  
18 client response.

19 12. The response data may be formatted an XML message and the client response  
20 document is an HTML document.

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## 22 BRIEF DESCRIPTION OF THE DRAWINGS

23 13. Figure 1 is a block diagram of an electronic bill presentment and payment  
24 system consistent with the present invention;

25 14. Figure 2 is a flowchart illustrating exemplary operation of a web server in  
26 accordance with one embodiment of the invention;

27 15. Figure 3 is a flowchart illustrating exemplary operation of an application server  
28 in accordance with one embodiment of the invention;

- 1       16. Figure 4 is a flowchart illustrating exemplary invoice loading in accordance with  
2       one embodiment of the invention;
- 3       17. Figures 5a, 5b, and 5c are workflow diagrams illustrating exemplary host user  
4       operations in one embodiment of the invention;
- 5       18. Figures 6a, 6b, and 6c are workflow diagrams illustrating exemplary biller  
6       system operations in one embodiment of the invention;
- 7       19. Figures 7a, 7b, and 7c are workflow diagrams illustrating exemplary biller  
8       system administration operations in one embodiment of the invention;
- 9       20. Figures 8a, 8b, and 8c are workflow diagrams illustrating exemplary payer  
10      system operations in one embodiment of the invention;
- 11      21. Figures 9a and 9b are workflow diagrams illustrating exemplary payer system  
12      invoice/payment operations in one embodiment of the invention;
- 13      22. Figure 10 is a workflow diagram illustrating exemplary payer system reporting  
14      operations in one embodiment of the invention; and
- 15      23. Figure 11 is a workflow diagram illustrating exemplary payer system  
16      administration operations in one embodiment of the invention.

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## 18           **DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS**

### 19           **Exemplary Bill Presentment and Payment System**

- 20      24. Figure 1 illustrates an electronic bill presentment and payment system 10  
21      consistent with the present invention. System 10 includes at least one biller  
22      system 12, at least one payer system 14, at least one business service provider  
23      system 16, and a payment processing system ("ASP") 18, in communication  
24      with one another via a network 20. The network 20 may be a TCP/IP compliant  
25      network, such as the Internet. It should be appreciated that each of the biller  
26      system 12, payer system 14, business service provider system 16 and ASP 18  
27      (also referred to herein as "workstations") may be remotely located from each  
28      other and may be controlled by separate entities. Alternatively, permutations of

1       each of the biller system 12, payer system 14, business service provider system  
2       16 and ASP 18 may be commonly controlled and/or located at a single entity.

3       25. The biller system 12 and payer system 14 may interface with the ASP 18 in real  
4       time via a web browser or other TCP/IP compliant software. The biller system  
5       12 and payer system 14 may comprise computing devices with appropriate  
6       network interface hardware and software for establishing a TCP/IP session with  
7       a web server 30 at the ASP 18 and for executing an application for interfacing  
8       with the web server 30. The application may be typical HTML Internet web  
9       browser software, such as Netscape Navigator<sup>TM</sup> or Microsoft Internet  
10      Explorer<sup>TM</sup>, which is capable of receiving HTML documents from the web server  
11      30 and returning HTTP posts to the web server 30. It should be appreciated  
12      that such HTML interface enables an operator of a biller system 12 or payor  
13      system 14 to read, write, manipulate data, and otherwise interact with the ASP  
14      in real time.

15      26. The biller system 12 and payor system 14 may also interface with the ASP 18  
16      utilizing a batch interface for exchanging large quantities of data in data files of  
17      a predetermined format. The batch interface may use TCP/IP or other network  
18      type sockets or may utilize a dedicated network circuit such as a value added  
19      network (VAN).

20      27. The business service provider system 16 may be an exchange or other service  
21      bureau application providing a plurality of business processing services to its  
22      clients (which may include the biller system 12 and/or payer system 14). One  
23      such business processing service may be electronic bill presentment and  
24      payment, as may be provided using a system and/or method consistent with the  
25      invention. In such a configuration, from the point of view of the service provider  
26      system 16, the ASP 18 may be a back end system for performing such bill  
27      presentment and payment portions of the overall services. The service provider  
28      system 16 may communicate with the ASP 18 utilizing data files with a  
29      predefined format to assure that the content of such data files may be  
30      recognized by the intended hardware and/or software. The predetermined data

1 file may be a data file with each data element including a label or tag to identify  
2 the data.

3 28. A typical language for structuring such tagged field data files is known as the  
4 extensible markup language (XML) and the predetermined data structure is  
5 known as a schema. The data is referred to as an XML message. Utilizing the  
6 Internet 20, the service provider system 16 and the ASP 18 may establish a  
7 TCP/IP session and exchange XML messages.

8 29. It should be appreciated that, in an alternative embodiment, a biller system 12  
9 or a payer system 14 may operate an accounting system interface application  
10 rather than a web browser. In this case, the biller system 12 or payer system  
11 will communicate with the ASP 18 utilizing XML messages, and the XML  
12 communication may be similar to that which may occur between the ASP 18  
13 and the service provider system 16. Such an accounting system interface  
14 application may enable the biller system 12 or payer system 14 to avoid  
15 manually reading data from an HTML document and manually re-entering into  
16 an accounting system. More specifically, the XML messages may be used to  
17 directly input content into the accounting system or, at a minimum,  
18 automatically populate content onto an accounting system data entry screen.

19 30. The ASP 18 may comprise one or more web servers 30 coupled to a secured  
20 zone network 22 between two routers 24, 26 serving as firewalls, one for  
21 protecting the internal private network 28 of the ASP 18 and one for blocking  
22 unauthorized Internet access. This zone 22 is often referred to idiomatically as  
23 a DMZ (i.e. "de-militarized zone"). It is noted that one or more firewalls may be  
24 placed between any one of a number of components of the present invention  
25 for security purposes. In this standard firewall configuration of a DMZ 22, the  
26 web servers 30 may be coupled to the Internet 20 by a first router 24 and  
27 coupled to a private network 28 by a second router 26. On the "front end", the  
28 web servers 30 may establish the TCP/IP sessions and communicate with the  
29 biller systems 12, payer systems 14, and business service provider systems 16,  
30 as described above. On the back end, the web servers 30 may use XML

1 messages to make remote processing calls (RPCs) to an application server 32  
2 (described hereinbelow in further detail) and may receive XML response  
3 messages to such calls. An invoice loader 34 (described hereinbelow in further  
4 detail) may be provided for transmitting batch input to a database server 36,  
5 which may store invoice and other financial, transactional, or non-financial data.  
6 Those skilled in the art will recognize that such data may be generated by one  
7 of any number of billing systems, e.g., SAP, Oracle Financials, JD Edwards,  
8 People Soft, Great Plains, etc. The data outputted by these billing systems and  
9 input into the system may come in a variety of formats including raw data, print  
10 file format, and X-12 ANSI 810 (EDI). The database server 36 may include a  
11 database application 35 (described hereinbelow in further detail) for reading  
12 and writing to the raw data stored on the magnetic media of the database.

## Web Server

- 14 31. With reference to the flowchart of Figure 2 in conjunction with Figure 1, an  
15 exemplary fundamental operation of a web server 30 in accordance with one  
16 embodiment of this invention is shown. A TCP/IP session may be established  
17 at step 40 with a remote client, which includes appropriate exchanges of  
18 passwords and/or other authentication messages to verify that the remote client  
19 has authorized access. Clients may be either workstations which interface with  
20 the server 30 using a browser interface, or, alternatively, software clients which  
21 interface with the server 30 using XML messages. Step 42 represents a  
22 determination as to whether the remote client is operating a web browser or  
23 whether the client is operating an XML enabled application. If the remote client  
24 is operating a web browser, the server 30 may send out an initial HTML  
25 document to the client at step 48. This initial document may be the main menu  
26 page that the operator at the remote client might expect to see immediately  
27 after logging onto the system utilizing the browser. The server may then  
28 receive an HTTP post from the remote client at step 50 and, in response to  
29 such HTTP post, build an XML message for making a remote processing call to  
30 the application server 32 at step 52. More specifically, the XML message is  
31 based on the content of the post and a predetermined schema for the function

1       that the operator of the remote client has requested via the HTTP post. For  
2       example, if the operator had selected to view a list of open invoices from the  
3       HTML menu document, the server might build an XML message for requesting  
4       open invoices from the application server 32 based on the schema for viewing a  
5       list of open invoices in response to the HTTP post.

- 6       32. Step 54 represents the server making an XML remote processing call to the  
7       application server 32 utilizing the XML message. An XML response message  
8       may be received back from the application server 32 at step 56. The web  
9       server may then utilize the content of the XML response message to build an  
10      HTML document to send to the remote client in response to the remote client's  
11      HTTP post at step 58. More specifically, each web server 30 may include a  
12      style sheet database 52 that stores style sheets for various documents that may  
13      be sent to remote clients and may provide different style sheets for the same  
14      document based on different clients. As such, the branding, look and feel, and  
15      layout of documents may be varied on a client-by-client basis. The step of  
16      building an HTML document may therefore also include selecting a style sheet  
17      corresponding to the remote client and combining the style sheet with the  
18      content of the XML response message to build the HTML document. The style  
19      sheet may include data fields and building the HTML document may include  
20      populating the style sheet by matching data elements from the response  
21      message with fields on the style sheet. The HTML document may then be sent  
22      to the remote client at step 59, and, returning to step 50, another HTTP post  
23      may be received and the foregoing steps repeated for that HTTP post.

- 24      33. Because it is envisioned that the operator of the biller system 12 (Figure 1) may  
25      provide electronic bill presentment and payment services to several of its  
26      suppliers, each operating a payor system 14, it is envisioned that style sheets  
27      will be common to all biller systems 12 and payor systems 16 when interfacing  
28      with the ASP 18 with respect to reading, writing, and manipulating data at the  
29      ASP 18 related to amounts due to the biller operating the biller system 12. In  
30      which case, a style sheet is selected by identifying the biller system 12 utilizing

- 1       an element of the response message and selecting a style sheet corresponding  
2       to such biller system 12.
- 3     34. Similarly, It is envisioned that he operator of a payor system 13 may provide  
4       electronic bill and payment services to several of its customers, each operating  
5       a biller system 12. It is envisioned that style sheets will be common to all biller  
6       systems 12 and payor systems 16 when interfacing with the ASP 18 with  
7       respect to reading, writing, and manipulating data at the ASP 18 related to  
8       amounts due to the biller operating the biller system 12 from such operator of  
9       the payor system 13 providign the services to its customers. In which case, a  
10      style sheet is selected by identifying the payor system 14 utilizing an element of  
11      the response message and selecting a style sheet corresponding to such payor  
12      system 14.
- 13    35. Alternatively, if at step 42 the remote client is determined to be a client utilizing  
14       an XML enabled application instead of a web browser, the web server may  
15       send an initial XML message to the remote client at step 60. The web server  
16       may then receive an XML message from the remote client at step 62 and  
17       validate the XML message at step 64. If necessary, the content may be  
18       transformed into an XML message compliant with the schema needed for  
19       making a remote processing call to the application server at step 67 if it did not  
20       validate at step 64.
- 21    36. The schema-compliant XML message may then be used to make the remote  
22       processing call to the application server at step 66. At step 68, a response XML  
23       message may be received from the application server, and, at step 70, the  
24       response XML message may be returned to the remote client. Thereafter,  
25       returning to step 62, another XML message may be received and the foregoing  
26       steps may be repeated.
- 27    37. It should be appreciated that the above description represents an exemplary  
28       process utilized for interacting with each remote client. In operation, the server  
29       may be operating with a plurality of remote clients simultaneously and/or  
30       utilizing a multi-tasking based operating environment. Furthermore, a plurality

of web servers 30, each communicating with a plurality of different clients, may each be capable of making XML calls to the application server 32 to perform the above described functions.

## Application Server

38. The application server 32 may perform the main processing of the business functions carried out by the ASP 18. The application server 32 may operate within a hardware and software environment. The software environment may comprise a plurality of applications that may be object-oriented and/or table-driven, whereby new products, applications, modules and/or transaction types may easily be integrated. Such software components may include, e.g., an operating environment 41 (e.g. Microsoft Windows NT<sup>TM</sup>, Windows 2000<sup>TM</sup>, or Sun Solaris<sup>TM</sup>), transaction processing software (e.g. Microsoft Transaction Server<sup>TM</sup>), communications software, database tools (e.g. RogueWave<sup>TM</sup>), query and/or reporting software (e.g. Seagate's Crystal Reports<sup>TM</sup>), a database interface 33, a message parser.builder 51, a business function selection object 38, one or more business objects 37, and/or one or more other applications, which may be table-driven. As described hereinbelow with respect to Figure 3, the message parser.builder 51 may verify access levels of clients accessing the web servers 30, as well as verify the format of XML messages and build appropriate messages to pass to the appropriate selection objects 37 for execution.

39. The transaction processing software may be a component-based transaction processing application for developing, deploying, and managing high performance, scalable, and robust enterprise, Internet, and intranet server applications, which defines an application programming model for developing distributed, component-based applications and provides a run-time infrastructure for deploying and managing these applications. A clustering application may optionally be provided for load balancing and fail-over services to cluster distributed application servers into a single, high-performance, highly available environment of application server resources, thereby avoiding

bandwidth, latency, and congestion problems and providing multi-server scalability for unlimited concurrent user access. The query and/or reporting software may be an application or object providing for an environment in which client reports and file download formats are easily customizable. One or more business objects 37 or applications may reside on the application server 32, such business objects 37 or applications being the components that perform the central transactional functions of the server 32. The business objects may receive XML messages in a predefined format and return XML response messages in a predefined format. Menus of options (as shown in Figures 5-11 and described hereinbelow) may be made available to the client by the message parser.builder 51 (or, as those skilled in the art will recognize, by one of any number of components of the invention, e.g., selector or another business object).

40. As discussed hereinbelow, exemplary business objects may include an object for reviewing invoices, an object for making adjustments to invoices, and an object for initiating invoice payment. One or more of any of the foregoing described applications may access the database server 36 via the database interface 33 and/or database application 35 for purposes of retrieving and modifying its data. Other applications may be provided, consistent with the provision of billing, payment, or other financial or non-financial services. For example, an e-mail notice application may be provided for sending e-mail notices of the invoices to one or more payer systems 14 which are set up to receive e-mail notices. While the foregoing components of the application server 32 may be referred to herein as "applications", "modules", "components", "interfaces", and/or "objects", it should be understood by those skilled in the art that such labels should not be construed in any way to be limitations. Any of the components of the application server 32 may comprise machine-readable programming code embodied in a tangible medium, e.g., Java beans. Depending on whether the embodiment of the invention is object-oriented, such components may or may not be formal objects. A table at the end of this Detailed Description lists exemplary objects and corresponding XML messages

1       in one embodiment of the invention. It is noted that the business objects of the  
2       present invention should be modular, i.e., functionality may be added to,  
3       deleted from, or modified in the system by adding or removing business objects.  
4       Thus, each business object should be constructed with expected input and  
5       output data only, as though it were a "black box". The internal processes of  
6       each business object "black box" are not relevant to the overall operation or  
7       maintenance of the system, to the extent that any business object with a given  
8       set of expected input and output data may be substituted for an existing  
9       business object for performing a similar or identical function having the same  
10      set of expected input and output data, wherein the system need not ever  
11      require knowledge of the internal operation of the business object for proper  
12      functioning or maintenance.

13     41. With reference to the flowchart of Figure 3, which illustrates an exemplary  
14      operation of the application server 32 in one embodiment of the invention, in  
15      conjunction with Figure 1, the general operation of the application server 32 will  
16      now be described. First, an XML remote processing call may be received at  
17      step 72 from one of the web servers 30. The message parser/builder 51 may  
18      receive from the web servers 30 either an XML message from the software  
19      client or an HTTP post from the workstation client. If an XML message is  
20      received from a software client, the message parser/builder 51 may verify that  
21      the particular client has appropriate access levels for sending such XML  
22      message, thereby preventing a person from manually writing an XML message  
23      for an option that is outside of the permitted workflow for the client. After  
24      verifying access levels, the message parser/builder 51 may verify that the XML  
25      message is the exact format needed for passing to the selection object 37. If  
26      not, data may be extracted and the appropriate message is built. The message  
27      may then be passed to the selection object 37, which may pass the message to  
28      the appropriate business object 37 for execution. In the case of an HTTP post  
29      from a workstation, the message parser/builder 51 may build an XML message  
30      for performing the transaction based on the post and the access levels. The

1 message may then be passed to the selection object 37, which may pass the  
2 message to the appropriate business object 37 for execution.

- 3 42. A business function selection object 38 may then make a call at step 74 to the  
4 appropriate business object 37 associated with the XML call. The selected  
5 business function object may execute and generate at step 76 XML calls to the  
6 database interface 33. The database interface 33, in turn, may utilize  
7 predefined instructions at step 78 for directing the database server 36 to access  
8 and/or write data into the database tables. In one embodiment, the predefined  
9 instructions may be a group of instructions, e.g., SQL calls. It is noted,  
10 however, that the business function objects 37 may not directly perform the  
11 SQL calls at step 78. The database interface 33 object may exist so that the  
12 relational structure of the database 36 may be modified without modifying each  
13 of the business function objects 37. Each database relational structure may  
14 merely need to be defined in a database structure file (not shown) that may be  
15 used by the database interface 33 object to structure the appropriate SQL calls  
16 for execution at step 78. A response to the SQL call may then be received at  
17 step 80 from the database 36. A single XML call at step 76 from a business  
18 function object 37 may cause the database interface 33 object to initiate several  
19 SQL calls at step 78. Therefore, if more than one SQL call is necessary (as  
20 determined at step 90), a plurality of such calls may be initiated at step 78, as  
21 necessary, and the corresponding responses may be received at step 80.  
22 Once the database interface 33 object has completed the SQL calls at step 78,  
23 it may build (at step 82) and return (at step 83) a response XML message to the  
24 business function object 37. The response XML message may then be received  
25 at step 84 by the business function object 37. A business function object 37  
26 may need to initiate several XML calls to the database interface 33 object  
27 during performance of the selected business function, at step 76. Therefore, if  
28 more than one XML call is necessary (as determined at step 85), a plurality of  
29 such calls may be initiated at step 76, as necessary, and the corresponding  
30 database calls may be generated (at step 78) and may be received (at step 80),  
31 and appropriate XML responses may be built (at step 82), returned (at step 83),

and received (at step 84). Once the XML calls to the database interface have been completed at step 76, (i.e. the business function has been completed), the business function object 37 may build a response XML message at step 86 and may return the XML response message to the web server 30 at step 88, and the foregoing steps repeated for a subsequent XML remote processing call which may be received at step 72.

## Invoice Loader

43. With reference to the flowchart of Figure 4, which illustrates an exemplary invoice loading operation in one embodiment of the invention, in conjunction with Figure 1, the general invoice loader 34 operation will now be described. The invoice loader 34 module may provide batch input to the database 36. This may be useful because many enterprise accounting systems may export an invoice file on a periodic basis. The batch invoice file may then be sent at step 100 to the invoice loader module 34 via one of any number of means 53, e.g., as an e-mail attachment, FTP load, an EDI VAN (value added network), or another private network link. Therefore, the invoice loader module 34 may include a network interface (not shown) for coupling to the Internet and may include one or more private network interfaces (not shown) for coupling to EDI VAN's or other private network interfaces. Each of these network interfaces may be a network card, or may comprise such other hardware and software as may be appropriate to effect the network interconnection. Alternatively, the invoice loader module 34 may couple only to a local area network 28 at the processing facility (i.e. at the geographic location of the ASP 18), and one or more routers 24, 26 in the DMZ 22 may serve to couple the invoice loader 34 to the Internet 20 and to each private network, as may be appropriate.

44. Once the invoice loader module 34 receives the invoice file at step 102, it may verify that the file is in the appropriate invoice loader format at step 104. Typically, the biller may be responsible for running the necessary translation program to convert the invoice file from the biller's accounting system to the invoice loader format. However, it may be possible for the file to arrive at the

1 invoice loader module in the accounting system format, in which case the  
2 invoice loader module may then identify the accounting system format and run  
3 an appropriate translation program at step 106 to convert to invoice loader  
4 format. Exemplary formats from which invoices may be loaded include ANSI  
5 X12 810, flat ASCII files, or well formed XML schemas.

6 45. Once the invoice file is in the invoice loader format, the invoice loader module  
7 34 may enter the invoices into the database 36 at step 108 and may, if  
8 appropriate, send out e-mail notices at step 114 to one or more payer system  
9 14 users indicating that an invoice is available. To this end, the invoice loader  
10 module 34 may therefore include an invoice loader application 39. The invoice  
11 loader application 39 may make appropriate calls to a database application 35  
12 for loading the invoices. More specifically, the database application 35, which  
13 may run on the database server 36 (or, alternatively, on the application server  
14 32), may provide for the raw data stored on the magnetic media to be logically  
15 accessible in a relational database table format. Predefined instructions for  
16 accessing and writing data into the tables may be sent to the database  
17 application 35. In one embodiment, the predefined instructions may be a group  
18 of instructions, e.g., SQL calls. The invoice loader application 39 may therefore  
19 execute appropriate SQL calls for writing the invoice data to the database 36.

20 46. Once the invoice data is in the database 36, e-mail notices of the invoices may  
21 be sent out to one or more payer system 14 users who are set up to receive e-  
22 mail notices at step 114. An e-mail notice application 31 may be provided on  
23 the application server 32 for making appropriate SQL calls to the database 36.  
24 Such calls may be made for purposes of detecting new invoices at step 110, as  
25 well as determining, based on the identity of the payer, if an e-mail notice is  
26 required, at step 112. More specifically, the e-mail notice application 31 may  
27 search the database 36 for a flag or other identifier of a new invoice, and then,  
28 for each new invoice, may obtain data from a payer's profile indicating whether  
29 an e-mail notice is appropriate, and if appropriate, the address to which the e-  
30 mail notice should be sent. The e-mail notice application 31 may then send the

1 e-mail. Alternatively, the e-mail notice application 31 may run on the invoice  
2 loader module 39 instead of running on the application server 32.

3 **Database Server**

4 47. The database server 36 may be an OLTP (on-line transaction processing)  
5 system, embodied in a server, such as Microsoft SQL Server 7<sup>TM</sup>, Oracle 8<sup>TM</sup>,  
6 Sybase Adaptive Server R12<sup>TM</sup>, DB2<sup>TM</sup>, Informix<sup>TM</sup>, or another ODBC-compliant  
7 database. The database server 36 may be configurable for sharing with other  
8 applications, including access by a report writer application, and may comprise  
9 a distribution and replication protocol (DRP) device. A backup database server  
10 (not shown) may also be provided, wherein some or all of the data on the  
11 database server may be mirrored to the backup database server. In this  
12 configuration, in the event an application performing a transaction on the  
13 database server experiences failure, the application may start at the backup  
14 server location and proceed from the point of failure, thereby preserving  
15 transaction integrity.

16 48. The database 36 may be a relational database, i.e., data management  
17 technology modeled such that all data is organized as though it is formatted into  
18 tables, with the table columns representing the table's fields or domains and the  
19 table rows representing the values of the table's fields or domains. Data  
20 between tables may be related to one another, using, for example, pointer data.  
21 Data may be logically organized as tables but not necessarily physically stored  
22 as such. The database interface 33 may access and update data via a  
23 language interface or "structured query language" (SQL) calls. The database  
24 36 may comprise a relational database where the payer and biller profiles  
25 (which may include access control data and/or dispute rules) may be related  
26 between payer systems 14 and biller systems 12. The message parser.builder  
27 51 may retrieve access control data from the database 36 when a workstation  
28 client logs on. Similarly, business service provider profiles may be stored in the  
29 database 36 and may include access control data for one or more business  
30 service providers 16.

1    49. Invoice data stored on the database 36 may include invoice-specific data  
2    received from the biller 12 each time the biller 12 sends an invoice to the ASP  
3    18. Such data may include, e.g., the identity of the biller and payer, invoice line  
4    items, and settlement and payment options. Biller profile data may be stored on  
5    the database 36 and may include items that a biller 12 need only enter once,  
6    and may change only periodically thereafter. Such items may include dispute  
7    rules and access levels for each biller workstation with system access. The  
8    dispute rules may be payer-specific or may be applied globally to all  
9    payers.

10    50. Payer profile data may be stored on the database 36 and may include items  
11    that a payer 14 need only enter once, and may change only periodically  
12    thereafter. Such items may include access levels for each payer logon ID  
13    (referred to as a payer workstation) with system access.

## Client Types

15 51. In one embodiment, two client types may access the ASP 18, a workstation  
16 client (e.g. a browser) interfacing with the system 18 utilizing HTML documents  
17 and HTTP posts, and a software client interfacing with the system 18 utilizing  
18 XML messages. Both billers and payers may comprise workstation clients, and  
19 the message parser.builder 51 may present different work flow options to each  
20 via menus. Host (or “administrator”) users and help desk users may be biller or  
21 payer workstations having access levels which are a subset of all access  
22 options available to the biller or payer. Host users (who may be affiliated with a  
23 business service provider system) may control most non-invoice related data  
24 and functionality. A biller system user may control invoice related data and  
25 functionality associated with a specific billing company. A payer system user  
26 may have specific functionality associated with all related invoice transactions  
27 to the paying company. Help desk users may be provided access to the system  
28 in order to troubleshoot users’ questions.

29 52. Host users (also referred to herein as “administrators”) may configure and  
30 maintain the system. A single SuperUser account may be established for each

1 installation of the system. The SuperUser may be pre-configured with the  
2 system and have all permissions allowed. The SuperUser may create additional  
3 host users with a subset of their permissions. Host users may act as system  
4 administrator, whose role is to manage users in the system, handle database  
5 administration, monitor system activity, manage enrollment and handle system  
6 error conditions.

7 53. A host user may create a biller system and one or more biller administrator  
8 users associated with such biller system. This action may bind the specific  
9 biller system user to the invoices associated with the biller. Additional biller  
10 system users may be created by the biller administrator.

11 54. Similarly, A host user may create a payer system and one or more payer  
12 administrator users associated with such payer system.

13 55. A help desk user may be a hybrid type of user. The help desk user may  
14 manage technical support issues. This user may log in as any biller or payer  
15 system user and use the system as if they were actually that user. The  
16 application may disallow any changes made by this user from being committed  
17 to the database. The help desk user may be created by a host administrator or  
18 SuperUser. A user created as a help desk user may only perform the help desk  
19 functionality, with all other system functionality being disabled.

20 56. A help desk user may log on to the system through the standard logon page  
21 with their own user ID and password. The help desk user may then be  
22 immediately presented with the standard logon page, where he or she will then  
23 log on with the user ID of the person he or she is helping and the help desk  
24 user's password. Upon a successful log on, the help desk user may be  
25 connected as if he or she were the actual user, without the ability to modify any  
26 data.

27 **Login and Access**

28 57. The application server 32 may authenticate each client via a logon process, and  
29 each client may have a specific set of access levels for performing certain

functions, which may be a subset of all of the functions available to the particular biller, payer or business provider. The message parser.builder 51 may maintain a table of access levels for each client which is currently logged into the system. With respect to transaction requests, when an HTTP post is received from a workstation or an XML message is received from an application client, the message parser.builder 51 may only build the XML message from the HTTP (or pass the XML message received) if the client has appropriate access levels. With respect to responding to a transaction request, the message parser.builder 51 may control the clients' work flow and limit the menu choices which appear in the outbound XML message to those that would be available as next steps in the work flow for the particular client.

58. The system may permit a user (i.e. the operator of a biller, payer or business service provider workstation) to gain access by clicking on a "login" button on the initial screen, or by going directly to the logon URL without having to navigate through the initial pages by simply entering the full URL in the browser, "bookmarking" the page, or using a "favorites"-type feature of the browser. The system may present the user with a logon page, wherein he or she must specify a valid user ID and password to gain access. If an invalid ID or password is entered, the user may be told that an invalid ID/password was entered. In one embodiment, if a user enters a valid user ID and an invalid password five times in a row, the system may "disable" the user ID (i.e. the system 18 will not present the workstation defined by the ID with other system options until another workstation, with appropriate access levels, performs a function to reset the "disabled" account). If, after this period, the user enters a valid ID and password, the system may display a message indicating that their account has been disabled.

59. Alternative authentication methods may include any method of verifying the identity of a user or a component of the invention and may include a security mechanism such as one or more of a digital signature, a PIN number, a password, a smart card, or a "master" or "challenge" key. In one embodiment of the invention, an XML script may create a Java applet that monitors the

1 active application and interacts with a separate security server residing within  
2 the application server. The Java applet may be configurable to interrupt the  
3 current application to prompt for authentication, such as by a digital signature, a  
4 PIN number, a password, or a master key, and to communicate with the  
5 security server to effect the authentication. If the security operation is  
6 successful, the application may continue without interruption; otherwise, the  
7 application may be terminated according to the XML script. Alternatively, the  
8 foregoing process or a part thereof may be used for transferring data between  
9 any two components in an embodiment of the present invention, including those  
10 external to the invention, such as an end user, a client, a financial institution, a  
11 back office, an administrator, an e-mail or fax recipient, or a server. One or  
12 more of the foregoing security operations may be implemented using  
13 application security middleware, such as Ubizen's MultiSecure<sup>TM</sup> ETS,  
14 MultiSecure<sup>TM</sup> ASE, or MultiSecure<sup>TM</sup> WAC. Further security means may  
15 comprise one or more of the following: password or PIN number protection, use  
16 of a semiconductor, magnetic or other physical key device, biometric methods  
17 (including fingerprint, nailbed, palm, iris, or retina scanning, handwriting  
18 analysis, handprint recognition, voice recognition, or facial imaging), or other  
19 log-on security measures known in the art. Password protection may include  
20 certain validity requirements upon establishing a password, e.g., disallowing  
21 more than two consecutive characters in a password, disallowing the same  
22 password for a minimum of six consecutive password changes, and/or  
23 disallowing more than one user-initiated password change per day. Passwords  
24 may be set to expire after a certain number of days, and an inactive user  
25 account may be set to expire or become disabled after a certain number of days  
26 of nonuse.

- 27 60. Following logon, as described above, a user may be presented with  
28 predetermined work flow options based on the access levels available for his or  
29 her particular workstation.

## Security

2 61. Point-to-point data communications over the Internet may be handled by secure  
3 sockets between the web server 30 and client 12, 14, 16. Exemplary protocols  
4 used may include Netscape's Secure Socket Layer (SSL) or secure HTTP. As  
5 those skilled in the art will recognize, other embodiments of the invention may  
6 include one of any number of methods for two-way data encryption and/or  
7 digital certification for data being input to and output from the web server 30, to  
8 provide security to data during transfer. In particular, an algorithm such as  
9 Triple DES may be used to encrypt such data as account numbers, credit card  
10 numbers, tax ID numbers and/or passwords.

## **Host User Workflow**

12 62. Figures 5a, 5b, and 5c illustrate an exemplary host user workflow in one  
13 embodiment of the system. When a user logs in 501 to the system using the  
14 user ID of a host user, the system may display a host administration or  
15 "welcome" page 502. The system may display the user's name at the top in the  
16 form of a "Welcome 'Username'" message, for personalization. The system  
17 may display a host administration page containing host statistics and a list of  
18 "action items" with current counts and links to the corresponding pages. Such  
19 counts may include biller count, payer count, enrollment request count,  
20 connected user count, invoice load error count, total invoice count, and paid  
21 invoice count. The system may calculate these reported statistics at the time  
22 the active user logs on to the system and/or may update these statistics in real  
23 time. As part of reporting these statistics, a query tool may be integrated into  
24 the system to generate pre-formatted reports. The system may permit the host  
25 user to return to this page by clicking on a link that may be present on every  
26 page during system access. One area of the screen may contain navigation  
27 buttons grouped into categories, e.g., administration 503 and reports 504. The  
28 system may permit these categories to be expanded into subcategories that  
29 modify another portion of the screen. One area of the navigation frame may  
30 contain the user name (not the user ID) who is logged on. The system may

1        permit clicking on this link to modify the user's basic profile information, which  
2        the system may store as global information on the database.

- 3        63. The system may permit a host user to select an option to edit payers 507,  
4        wherein the system may permit the administrator to add, modify, or delete  
5        payers from an edit payer page 508. A payer may be a company that does  
6        business with one or more billers in the system. Each payer system may have  
7        one or more users that will have certain permissions. The edit payer page 508  
8        may contain a list of current payers in the payers list box. When an  
9        administrator selects a payer, the system may display information for that payer  
10      in the company information section. The system may permit an administrator to  
11      add information for a new payer in the company information section and select  
12      "add" to add the new payer. The system may permit company data to be  
13      entered for the following exemplary fields, which the system may store as global  
14      information on the database: name, "division", address, city, state, zip, country,  
15      SIC code, TIN, and organization type. The system may require the company  
16      name plus "division" to be unique. The system may permit modify and delete  
17      operations to be performed on the currently selected payer. The system may  
18      require fields for company information, such as name and phone. The system  
19      may display the list of payers and permit search and find operations, next and  
20      previous page navigation, first letter selector navigation, and scrolling  
21      navigation, in order to effectively display large numbers of payers.

- 22      64. The system may provide a user list box, which may be populated with the  
23      selected payer system's user names. As the administrator clicks on each user  
24      in the list, the system may display the user's information in the user information  
25      section. The system may provide an "edit users" option for directing the  
26      administrator to an "edit users" page, if the payer has been saved to the  
27      database. The system may provide an "edit users" page to allow the  
28      administrator to add, modify, or delete users associated with the current payer.  
29      This page may display the name of the payer at the top. The system may  
30      permit the host user to select an option to edit the active user profile 505,  
31      wherein the system may direct the host user to a page 506 displaying the

organization name of the host, biller or payer at the top, to establish the context of the current edit. The system may permit information to be maintained and edited at this page, which the system may store as global information on the database, including, e.g., last name, first, middle, phone, fax, e-mail, e-mail2, user id, password, confirmation, language, currency and privilege group. The system may require certain fields for user information, such as last name, first name, e-mail and phone. The system may provide a reset password button to reset the selected user's password to the default setting (e.g. user's last name). The system may also permit the administrator to add a new user to the current payer by entering information into the user information section and selecting "add". The system may require the combination of last name, middle initial and first name to be unique. The system may permit modify and delete operations to be performed on the currently selected user. The system may provide a checkbox for temporarily deactivating a user. The system may automatically send an e-mail to a new user after they have been added, informing them of how to connect and logon to the system. The system may not permit a host user to set permissions. The system may permit a host user to create biller or payer system administrator users, both of whom may be afforded all permissions.

65. The system may permit the host user to select an option to edit billers 509, wherein the system may permit the administrator to add, modify, or delete billers from an edit biller page 510. A biller may be a company that does business with one or more payers in the system. Each biller system may have one or more users that will have certain permissions. The edit biller page 510 may contain a list of current billers in the biller list box. When an administrator selects a biller, the system may display the information for that biller in the company information section. The system may permit the administrator to add information for a new biller in the company information section and select "add" to add the new biller. The system may permit company data to be entered for the following exemplary fields, which the system may store as global information on the database: name, address, city, state, zip, country, SIC code,

1       TIN, and default template type. The system may require that the company  
2       name be unique. The system may permit modify and delete operations to be  
3       performed on the currently selected biller. The system may require certain  
4       fields for company information, such as name and phone.

- 5       66. The system may permit a host user to select an option to edit biller websites  
6       and logos, directing the user to a biller website and logo page 511. The system  
7       may display a list of billers, and upon selection of a biller from the list, the  
8       system may populate the company information area with details about the  
9       current biller. For each biller, the system may permit a list of company logos  
10      and websites to be edited. The system may make new logos available to the  
11      system with an “add” button which uploads the logo file, and may likewise  
12      permit logos to be removed from the system with a “remove” button. The  
13      system may display a list of websites via a listbox containing the sites and a site  
14      details edit area. Upon selection of a website in the list, the system may  
15      populate the site details section. The system may permit the URL, description,  
16      and type of website to be edited. The system may provide a delete button for  
17      removing a site from the list. The system may provide a save button to save  
18      the current website. The system may provide a new site button for emptying  
19      the edit area to allow a new site to be entered and saved. The system may  
20      provide selectable links for accessing the biller’s enrollment page and biller  
21      profile page. The system may be adapted to store logo and website data as  
22      global information on the database.

- 23      67. As described above with respect to users associated with payers, the system  
24      may provide a user list box, which the system may populate with the selected  
25      biller system’s user names, and the system may provide an “edit users” option  
26      for directing the user to an “edit users” page, where the system may allow the  
27      administrator to add, modify, or delete users associated with the current biller.  
28      68. The system may permit the administrator to add a new user to the current biller  
29      by entering information into the user information section. The system may  
30      require that the combination of last name, middle initial and first name be

unique. The system may permit modify and delete operations to be performed on the currently selected user. The system may provide a checkbox for temporarily deactivating a user. The system may be adapted to store contact information as global information on the database, including, e.g., last name, first, middle, phone, fax, e-mail, e-mail2, user ID, password, confirmation, language, currency and privilege group. The system may require certain fields for user information, including last name, first name, e-mail and phone. The system may provide a reset password button for resetting the selected user's password to the default setting. The system may be adapted to automatically send an e-mail to a new user after they have been added, telling the user that they have 24 hours to log in and change their password or the account will be disabled (e.g. where the password is set to the default of user's last name; accounts may be re-enabled by a host user). The e-mail may inform them of how to connect and logon to the system.

69. The system may permit a host user to select a "relationships" option 512 for being redirected to a relationships page 513 for viewing, modifying and/or establishing biller/payer relationships. This page may contain a list of current billers in the billers list box and two payer list boxes: available payer and related payer. When a user selects a biller from the list box, the system may update the two payer list boxes. The available payer list box may contain all payers not currently related to the selected biller that have been approved by the biller. The related payer list box may contain all payers currently related to the selected biller. The system may provide "add" and "remove" buttons to allow payers to be added or removed from the related payers list. The system may display in a Payer ID# field the system-wide biller-customer number for the selected payer from either list. The system may not save this page unless all related payers have Payer ID#'s and may display a warning message may inform the user of this condition. The system may be adapted to store payer/biller relationship data as global information on the database.
70. The system may permit the host user to select an option to add/modify/delete administrators associated with the host. The system may permit the

1 administrator to add a new user to the channel host by entering information into  
2 a user information section and selecting “add”. The system may require that the  
3 combination of last name, middle initial and first name be unique. The system  
4 may permit modify and delete operations to be performed on the currently  
5 selected user. The system may provide a checkbox for temporarily deactivating  
6 a user. The system may be adapted to store contact information as global  
7 information on the database, including, e.g., last name, first, middle, phone, fax,  
8 e-mail, e-mail2, user ID, password, confirmation, language and privilege group.  
9 The system may require certain fields for user information, such as last name,  
10 first name, e-mail and phone. The system may provide a reset password button  
11 for resetting the selected user’s password to the default setting. The system  
12 may be adapted to automatically send an e-mail to a new user after they have  
13 been added, informing them of how to connect and logon to the system.

- 14     71. The system may permit a host user to select an option 514 to change security  
15       information, in which case the system may permit administrator, biller and payer  
16       security settings to be modified at one or more user security/privilege pages  
17       515. In the various privilege pages, the system may permit the privilege group  
18       to be entered and presented in the local language. The system may present the  
19       list of functional access permissions in the language of the active user.
- 20     72. For changing privilege information relating to host administrators, the system  
21       may permit administrator privilege groups to be defined and edited. The system  
22       may display a list of available permissions, the permissions being inherited from  
23       the active user currently logged on. The system may provide a listbox  
24       containing all defined administrator privilege groups, wherein selecting a  
25       previously defined group may cause the system to populate the list with the  
26       corresponding settings. The system may provide an “all” button for setting all  
27       permissions when selected, and a “none” button for clearing all permissions  
28       when selected. The system may permit add, modify and delete operations to  
29       be performed on the current privilege group. The following list may be  
30       representative of exemplary permissions that may be set for host  
31       administrators: create new billing entities; create/maintain new biller system

1        administrators; activate new biller system administrators; create new paying  
2        entities; create/maintain new payer system administrators; activate new payer  
3        system administrators; create/maintain new host administrators; maintain biller-  
4        payer relationships; reset biller/payer system administrator user passwords;  
5        maintain adjustment codes; edit mailing lists; and run canned reports.

- 6        73. For changing privilege information relating to billers, the system may permit  
7        biller permissions to be defined and edited. The system may display a list of  
8        available permissions, the permissions being inherited from the active user  
9        currently logged on. The system may provide a listbox containing all defined  
10      biller privilege groups, wherein selecting a previously defined group may cause  
11      the system to populate the list with the corresponding settings. The system  
12      may provide an "all" button for setting all permissions when selected, and a  
13      "none" button for clearing all permissions when selected. The system may  
14      permit add, modify and delete operations to be performed on the current  
15      privilege group. The following list may be representative of exemplary  
16      permissions that may be set: create/maintain new biller system users; activate  
17      biller system users; create/maintain new biller system administrator users; reset  
18      user passwords; maintain adjustment codes; edit biller bank holidays; edit  
19      biller/payer agreements; edit mailing lists; and run canned reports.

- 20      74. For changing privilege information relating to payer system users, the system  
21      may permit payer permissions to be defined and edited. A list of available  
22      permissions may be displayed, the permissions being inherited from the active  
23      user currently logged on. The system may display a listbox containing all  
24      defined payer privilege groups, wherein selecting a previously defined group  
25      may cause the system to populate the list with the corresponding settings. The  
26      system may provide an "all" button for setting all permissions when selected,  
27      and a "none" button for clearing all permissions when selected. The system  
28      may permit add, modify and delete operations to be performed on the current  
29      privilege group. The following list may be representative of exemplary  
30      permissions that may be set: create/maintain new payer system users; activate  
31      new payer system users; create/maintain new payer system administrators;

1       reset user passwords; maintain adjustment codes; edit payer bank holidays;  
2       edit biller/payer agreements; edit mailing lists; and run canned reports. The  
3       system may be adapted to store any of the foregoing permission data as global  
4       information on the database.

5       75. The system may permit a host user to select a “load invoices” option 516 for  
6       being redirected to a page 517 for performing a manual load of selected invoice  
7       files or controlling the automatic loading times of biller uploads. The load  
8       invoice page 517 may contain a list of current billers in a billers list box. When  
9       an administrator selects a biller, the system may use files found in the directory  
10      or subdirectories used for invoice loading associated with the selected biller to  
11      populate the invoice files list box. The system may permit the host user to  
12      select one or more files from the invoice files list box and select an option for  
13      loading them at that time, which may force the system to load the selected  
14      invoice files immediately. After the process is complete, the system may display  
15      any error information that occurred during processing may on this page. The  
16      system may handle the automatic loading of invoices through a scheduling  
17      interface.

18      76. The system may permit a host user to select a “host profile” option 505, which  
19      may direct the user to a host profile page 506 for allowing the host’s profile  
20      information and payment method information to be edited. The system may  
21      allow data to be entered for the following exemplary fields, which the system  
22      may be adapted to store as global information on the database: name, address,  
23      city, state, zip, country, phone, number, fax number, and maximum invoice  
24      amount allowed. The system may use the maximum invoice amount allowed  
25      field to establish a threshold for a maximum payment for a single invoice. The  
26      system may permit invoice values that exceed this amount to be loaded into the  
27      system but not to be paid through the system. The system may also permit  
28      payment method information to be modified at this page, i.e. the system may  
29      permit the administrator to define the payment methods that the host has  
30      currently enabled. The system may display a payment methods area consisting  
31      of two listboxes, an available methods box containing all the payment methods

that are currently unassigned by the host, and an enabled methods box containing all the methods the host has enabled. The system may provide two buttons to allow methods to be transferred from box to box. The system may provide save and cancel buttons at the payment methods area. Exemplary available payment methods may include ACH debit, credit card/procurement card, and paper check.

77. The system may permit the host user to select a reports option 504, which may cause the system to display subcategories that correspond to the available reports. Exemplary reports the system may generate may include: access report 521; invoice load and error reports 522; invoice payment reports 523; bottomline payment reports 524; analyze RDBMS (Relational Database Management System) 525; review performance statistics 526; and activity report 527. Activity report 527 may cause the system to detail the following exemplary activities: create new biller/payer; create new contacts; add/remove biller-payer relationships; edit biller bank holidays; edit biller/payer profiles; reset biller/payer system administrator passwords; add/edit adjustment codes; edit mailing lists; edit contact info; create new logins for contacts; edit login info; disable/enable logins; and help desk login. The system may permit the user to select from among various reporting options and/or filters 528 (which the system may be adapted to store as global information on the database), and the system may then generate a report and permit the user to view and/or print it at a report page 529.

78. Other functionality which the system may provide for the host user includes a password change selection 530, which may cause the system to direct the user to a password change routine 531; a help selection 533, which may cause the system to direct the user to a help routine 534; and a logout routine 550.

## Biller System Workflow

79. Figures 6a, 6b, and 6c illustrate an exemplary biller system workflow in one embodiment of the system. When a user logs in 601 to the system using the

1 user ID of a biller, the system may display a biller system administration or  
2 "welcome" page 602. The system may display the user's name at the top in the  
3 form of a "Welcome 'Username'" message, for personalization. The system  
4 may display at a biller system administration page key biller statistics and a list  
5 of "action items" with current counts, amounts in local currency and links to the  
6 corresponding pages, as well as information about the basic functionality of the  
7 main topics. The system may also display at this page information provided by  
8 the administrative user regarding how to contact the administrative user. The  
9 current counts may include total invoices, closed invoices, paid invoices, unpaid  
10 invoices, and adjusted invoices. The system may provide a selection to the  
11 user for filtering and/or sorting the counts. The system may permit the biller  
12 system user to return to this page by clicking on a link that may be present on  
13 every page during system access. One area of the screen may contain  
14 navigation buttons grouped into categories, e.g., administration 603 (discussed  
15 further hereinbelow at "Biller System Administration"), invoices/payments 680,  
16 and reports 604. The system may expand these categories into subcategories  
17 that modify another portion of the screen. One area of the navigation frame  
18 may contain the user name (not the user ID) who is logged on. The system may  
19 allow the user to click on this link to modify his or her basic profile information.  
20 The system may provide other functionality, including a "help" button 650 for  
21 directing the user to a help section 651 and a "logout" button 652 for logging the  
22 current user out of the system.

23 80. The system may allow the biller system user to select an option to edit the  
24 active user profile, wherein the system may direct the biller system user to a  
25 page displaying the organization name of the biller at the top, to establish the  
26 context of the current edit. The system may permit information to be  
27 maintained and edited at this page and may store the information as global  
28 information on the database, e.g., last name, first, middle, phone, fax, e-mail, e-  
29 mail2, password and confirmation. The system may require certain fields for  
30 user information, including last name, first name, e-mail and phone. The system  
31 may include this information in e-mails which may be sent through the system

1 and may also make this information available to biller and payer system  
2 administrators.

- 3 81. The system may permit a biller system user to select an option 605 to display  
4 invoices based on selected criteria and/or specify general search criteria for  
5 listing invoices. Depending on the selection, the system may direct the user to  
6 a "view options" page 606 for filtering and sorting. The system may provide a  
7 view options page 606 to allow the user control over the subset of data that will  
8 be displayed and the order in which the data will be presented. To further  
9 facilitate the presentation of invoices, the system may permit settings  
10 associated with a specific report to be automatically saved and used again the  
11 next time the user generates the report. Considering the time it may take to  
12 generate certain reports (e.g. lengthy reports), the system may also provide an  
13 option to bring this page up before running a report, to limit the scope and time.  
14 The view options page may consist of three exemplary areas: filter, sort and  
15 options. In the filter area, the system may provide the following exemplary  
16 choices: by date (past due, eligible for discount, due within xxx days); and by  
17 status (paid invoices, adjusted invoices, unpaid invoices, paid through another  
18 source); and by payer (all payer, specific payer); and by attribute range  
19 between xxx and yyy (none, invoice numbers, store / location, purchase orders,  
20 purchase request number, invoice issue dates, dollar amount, bill of lading  
21 numbers, receiving location zipcodes, invoice aging). The system may also  
22 provide the ability to search for invoice number, store or location number,  
23 routing number and P.O. number, by using wildcards. The system may provide  
24 a sort area to allow returned results to be sorted in ascending or descending  
25 order according to the following exemplary criteria: due date, invoice number,  
26 invoice date, purchase order number, net amount due, store or location  
27 number, and invoice aging. In one embodiment, the system may allow sorting  
28 criteria and order to be determined by a sort order combo box, which may  
29 default to ascending, and three sort criteria boxes, the first of which defaults to  
30 due date, while the rest default to no sort criteria (spaces). The system may  
31 provide an options area with the following exemplary choices: display all in one

1 page or show count (with the default being all in one page), remember and use  
2 previous settings, and show view options page before presentation. The  
3 system may be adapted to store filter, sort, and options data as global  
4 information on the database.

5 82. The system may allow a biller system user to select an option to display a page  
6 607 for listing invoices matching specified criteria. The system may display at  
7 this screen the filter/sort criteria that are in use for this display. The system may  
8 display invoices using a paging concept (i.e. 1 – 20 of 362). When displaying  
9 invoices, the system may remove any existing navigation area, so as to  
10 optimize the invoice display area. In one embodiment, the system may display  
11 a page separated into two sections, with the header section containing non-  
12 scrolling data and/or buttons and the body section that scrolls as necessary,  
13 depending upon the width of the browser window and the number of invoices  
14 being displayed. The header section may contain the following elements:

15 83. The user's selection criteria, i.e., All Invoices – Past due.

16 84. The display range text in the format of first – last of maximum, i.e., 1-20 of 200.

17 85. "Next 'n'" may cause the system to navigate the user to the next "n" invoices,  
18 i.e., "Next 20". If the last "n" invoices are currently being displayed the system  
19 may disable the "Next" button.

20 86. "Previous 'n'" may cause the system to navigate the user to the previous "n"  
21 invoices, i.e., "Previous 20". If the first "n" invoices are currently being displayed  
22 the system may disable the "Previous" button.

23 87. "All" may cause the system to change the mode from displaying a page of  
24 invoices to displaying all invoices, and the system may label the button "Page",  
25 i.e., 1-200 of 200. If the "Page" button is selected, the system may display at  
26 this page the first "n" invoices, and system may label the button "All".

27 88. "Back" may cause the system to return to the previous screen, step, or function.

28 89. "Search" may cause the system to perform a search in the current invoice list by  
29 using the "Find" feature. The system may permit only the invoices currently

1 being displayed to be searched. The system may allow the user to type a string  
2 to search for before selecting the “Search” button. The system may search each  
3 invoice for the specified string. If a match is found, the system may scroll  
4 the invoice record into view and select the text found. Selecting “Search” again  
5 may cause the system to find the next instance of the string. The system may  
6 permit wildcard searches.

7 90. “Show Selected” may cause the system to display all invoices that have been  
8 manually checked. In the last column of the invoice list, the system may allow a  
9 user to select individual invoices. While the user remains on this page, the  
10 system may maintain in a list all invoices that are marked as selected. If the  
11 user switches the context of this view, the system may not remove any  
12 selection made by the user. Clicking on the “Show Selected” button may cause  
13 the system to display all the invoices the user has selected. The system may  
14 change this button to either “Page” or “All”, depending on the state of the  
15 selection when this button was pressed. Selecting this button again may cause  
16 the system to return the invoice list to its previous mode. The system may  
17 display all selected invoices, even if they exceed the page limit.

18 91. “Close” 608 may cause the system to mark as closed all invoices that are  
19 selected. The system may display to the user a confirmation message before  
20 the invoices are closed, e.g., “You have selected 24 invoices to close. Are you  
21 sure you want to close these invoices?” The system may not permit closed  
22 invoices to appear in any active queries. The system may subject invoices that  
23 are marked as closed to host archiving and purging criteria.

24 92. “Paid Through Another Source” may be provided by the system as an option for  
25 the biller system user to mark an invoice as closed by selecting desired invoices  
26 and clicking on the “Paid through another source” button. Once this occurs, the  
27 system may, for the invoices in question, update their audit trail to reflect that  
28 they were paid outside the system, and then change their status to “Closed”.

29 93. In the body section, the system may display all invoices in table format. The  
30 width of the table columns may be proportional to the width of the browser

1 window. If the browser window is narrowed, the system may decrease column  
2 widths appropriately and wrap text within each column, as necessary. If an  
3 invoice has adjustments, the system may highlight that line in color to indicate  
4 this fact. The system may link the invoice number field to the invoice detail  
5 page. The system may link the status field to the invoice history page, at which  
6 the system may display a full status history for the selected invoice. By default,  
7 the system may display the following exemplary columns: payer name, invoice  
8 number, due date, status, net amount due, amount to pay, P.O. number, P.O.  
9 requisition number, store number, and select.

- 10 94. The system may permit the biller system user to select an option to display the  
11 details of a selected invoice, which may cause the system to direct the user to  
12 an invoice detail section 610. The system may use one or more predetermined,  
13 customizable and/or selectable template schema (which may be stored as  
14 global information on the database) to format the biller detail, and the system  
15 may provide a single biller multiple templates from which to select. The invoice  
16 detail page may contain various sections. One section may display summary  
17 information for the selected invoice, information about the biller, information  
18 about the particular invoice, and/or information about the payer. The system  
19 may provide selectable buttons for obtaining more information about the current  
20 invoice, e.g., items 611, messages 612, e-mail 613, status 614, shipping info  
21 615, discounts 616, and notes 617. The system may display line items that  
22 have been adjusted in a different color. Upon selection by a user of the items  
23 button 611, the system may toggle the header view from showing a detailed  
24 header description to allowing the user to perform basic search operations on  
25 the details of this invoice. The items button 611 may cause the system to toggle  
26 to header. Clicking on the header button may cause the system to return to the  
27 previous view, thereby providing more space for viewing details on the current  
28 page, as follows. Another section may contain the line items that make up the  
29 invoice. The system may color code highlight line items that have been  
30 adjusted. Each line may have a clickable line number. Clicking a line item's  
31 number may cause the system to expand the line to show its detail. Clicking a

1       particular adjustment may cause the system to display a window with details  
2       about that specific adjustment. Another section may contain the invoice  
3       summary. For both the original amount billed and the amount to pay, the  
4       system may calculate and display the following: gross total invoice; time  
5       conditional discount; other discount / charge; a general adjustments link  
6       displays the general adjustment that was entered for this invoice (the system  
7       may only present this link if this invoice has a general adjustment; the system  
8       may show each general adjustment separately; and the system may permit  
9       general adjustments to be removed); sales tax; other tax; and net amount due.

- 10      95. The system may, upon selection of the messages button 612, display a new  
11       browser window 622 allowing the biller system user to enter a new message for  
12       the payer associated with the current invoice. The system may permit new  
13       messages to be entered into a textbox and sent by pressing a “save” button.  
14       The system may provide a “cancel” button for discarding the current message  
15       and returning to the invoice detail page. The system may provide a discounts  
16       button 616 for opening a separate browser window 626 displaying discounts  
17       information for the current invoice, including, e.g., time conditional discount %;  
18       time conditional discount amount; time conditional discount date; invoice date;  
19       and unconditional discount or charge. The system may provide a shipping info  
20       button 615, which may cause the system to display additional shipping  
21       information for this invoice in a separate browser window 625, including, e.g.,  
22       ship to location, date shipped, carrier, bill of lading number, terms, units, unit  
23       code, weight, volume, package dimensions, package contents, and notes. The  
24       system may provide a notes button 617 for opening a separate browser window  
25       627 containing a list of entered notes for this invoice. In the separate browser  
26       window, the system may permit the user to enter new notes into a new note  
27       textbox and save them by clicking an “add note” button. Clicking a “cancel”  
28       button may cause the system to return the user to the invoice detail page,  
29       discarding any new notes. The system may automatically log adjustment notes  
30       and biller disputes as notes for the current invoice. The system may provide an  
31       e-mail button 613 for opening a separate browser window 623 with a new e-

1 mail referencing the selected invoice. The system may permit the user to enter  
2 an e-mail message to selected users about the current invoice. The system  
3 may permit e-mail to be sent to the recipients that are picked from the recipients  
4 list, the contents of which may be based on the e-mail distribution list set up by  
5 the payer system administrator. The system may provide a status button 614  
6 for opening a separate browser window 624 displaying a page containing the  
7 status history for the selected invoice, including, e.g., date / time, user ID, and  
8 user name and status. The system may further provide adjustment buttons,  
9 e.g., general adjustment 618, quantity adjustment 619, price adjustment 620,  
10 and allowance 621, at the invoice detail 610 section. The system may permit a  
11 general adjustment button 618 to be selected to open a separate browser  
12 window 628 containing general adjustment information for this invoice. This  
13 information may be read-only and may include the following exemplary items of  
14 information: adjustment amount, reason code, and notes. The system may  
15 permit a quantity adjustment button 619 to be selected for a specific invoice line  
16 item to open a separate browser window 629 containing quantity adjustment  
17 information for that line item. This information may be read only and may  
18 include the following exemplary items of information: adjustment quantity,  
19 reason code, and notes. The system may permit a price adjustment button 620  
20 to be selected for a specific invoice line item to open a separate browser  
21 window containing price adjustment information for that line item. This  
22 information may be read only and may include the following exemplary items of  
23 information: new price, reason code, and notes. The system may permit an  
24 allowance button 621 to be selected for a specific invoice line item to open a  
25 separate browser window 631 containing allowance information for that line  
26 item. This information may be read only and may include the following  
27 exemplary items of information: allowance amount, reason code, and notes.

28  
29 96. The system may make other options available to the biller system user for  
30 selection, e.g. an items button for displaying the invoice details in item view.  
31 The system may, upon selection of such an button, remove the header from the

1 invoice details and all but the net amount due field of the footer, thereby  
2 allowing more screen space to be used for the presentation of invoices. The  
3 system may provide a search function for performing a search in the current  
4 invoice list. The system may permit only the invoices currently being displayed  
5 to be searched. The system may allow the user to type a string to search for  
6 before selecting the “Search” button. The system may search each invoice may  
7 for the specified string. If a match is found, the system may scroll the invoice  
8 record into view and select the text found. Selecting “Search” again may cause  
9 the system to find the next instance of the string. The system may permit  
10 wildcard searches. The system may provide clickable line numbers in the items  
11 view line, whereby upon clicking a line item’s number, the system may expand  
12 the line to show its invoices, and clicking a particular adjustment may cause the  
13 system to bring up a window with details about that specific adjustment.

14 97. The system may permit the biller system user to select an option 608 to retrieve  
15 all closed invoices in the system subject to the criteria set in the view options  
16 page and may provide the additional option of restoring selected invoices that  
17 have been closed into the current collection. The system may move invoices  
18 that have been checked to the open state when the user selects an “open”  
19 button.

20 98. The system may permit the biller system user to select an option 632 to export  
21 files, i.e. to download data directly from the server, bypassing the need to have  
22 the data flow through a transmission to the biller system user. Selecting the  
23 export files option 632 may cause the system to direct the user to the invoice  
24 export section 633, from which the user may either edit export templates or  
25 export files. Upon selection of edit export templates, the system may allow the  
26 biller system user to edit the templates used in file export. An export templates  
27 listbox may show the present export templates while a template settings area  
28 may contain all the attributes and settings of the current selected template.  
29 Upon selection of a template from the export templates listbox, the system may  
30 populate the fields of the template settings area. In this area, the system may  
31 allow the biller system user to add, modify, or delete file export templates by

1 using a set of buttons or controls. The set of invoices to be exported may be  
2 based on the invoices that are being viewed at the time export is chosen. The  
3 system may permit the user to set that filter through the filter/sort page. The  
4 template settings area may contain the following exemplary controls (which the  
5 system may be adapted to store as global information on the database): fields  
6 and export order (may contain a listbox of the available invoice fields and an  
7 ordered listbox of fields marked for export with two buttons for moving fields  
8 between listboxes; up and down buttons may allow the field export order to be  
9 changed); and file formats (a listbox that allows the file format to be selected; if  
10 ASCII is chosen a delimiter section may be displayed and the user may need to  
11 select field and record delimiters). The system may provide a “set default”  
12 button for allowing the user to set the current template as the default template  
13 for the file export page. Upon selecting file export, the system may allow the  
14 biller system user to export invoices based on an export template. In the  
15 templates listbox, the system may show the present export templates while the  
16 export range may allow the user to select the date range criteria for including  
17 invoices in the export. In the templates list, the system may default to the  
18 template set as default from the edit export templates page; if no default  
19 template was set, the system may select the first entry in the listbox. An “export”  
20 button may cause the system to perform the file export, while a “cancel” button  
21 may cause the system to abort. The system may be adapted to export files in  
22 such exemplary formats as 810 for invoices, 820 for payments, XML, delimited  
23 files, and fixed-length PayBase™ compatible files.

- 24 99. The system may permit the biller system user to select a reports option 604,  
25 which may cause the system to display subcategories that correspond to the  
26 available reports. Exemplary reports may include: paid invoices 641, total  
27 invoices 642, adjusted invoices 643, pending invoices 644, closed invoices 645,  
28 credit notes 646, and statistics 647. Other exemplary reports may include  
29 cashflow forecasting, aged outstanding invoice, returned items, modified invoice  
30 history, biller profile maintenance, payment history, and outstanding invoice  
31 status. The system may permit the user to select from among various reporting

options and/or filters 648 (which the system may be adapted to store as global information on the database), and the system may then generate a report 649 for viewing and/or printing.

# Biller System Administration Workflow

- 5 100. Figures 7a, 7b, and 7c illustrate an exemplary biller system administration  
6 workflow in one embodiment of the system. From the administration 700  
7 screen, the system may permit a biller system administrator to select from  
8 among functions including, e.g., edit biller profile 701, archive/purge 710, edit  
9 banks 702, edit users 703, edit event e-mails 704, edit payers 705, adjustments  
10 706, edit export template 733, and password/profile change 735.

11 101. Upon selection by the biller system administrator of the edit biller profile 701  
12 function, the system may redirect the biller system administrator to a biller  
13 profile section 707 for editing the biller's profile information. The system may  
14 permit company data to be entered and/or edited for the following exemplary  
15 fields (which the system may be adapted to store as global information on the  
16 database): name, address, city, state, zip, country, SIC code, TIN, and default  
17 template type. From the biller profile section 707, the system may permit the  
18 biller system administrator to select a function for editing logos and websites,  
19 which may cause the system to direct the administrator to a logo and website  
20 editing page 708, wherein the administrator may edit the biller's logos and  
21 available websites (which the system may be adapted to store as global  
22 information on the database). The system may display a list of billers, and the  
23 selection of a biller from the list may cause the system to populate the company  
24 information area with details about the current biller. For each biller, the system  
25 may permit a list of company logos and websites to be edited. The system may  
26 permit new logos to be made available to the system with an "add" button for  
27 uploading the logo file, and the system may likewise permit logos to be  
28 removed from the system with a "remove" button. The system may display a  
29 list of websites via a listbox containing the sites and a site details edit area.  
30 Selecting a website in the list may cause the system to populate the site details

1 section. The system may permit the URL, description, and type of website to  
2 be edited. The system may provide a delete button for removing a site from the  
3 list and a save button for saving the current website. The system may provide a  
4 new site button for emptying the edit area to allow a new site to be entered and  
5 saved. The system may provide selectable links for accessing the biller's  
6 enrollment page and biller profile page. The system may permit the  
7 administrator to select a template editing function, which may cause the system  
8 to direct the user to a template editing section 709. In the template editing  
9 section, the system may permit one or more predetermined, customizable  
10 and/or selectable template schema (which the system may be adapted to store  
11 as global information on the database) to be established and/or edited to format  
12 the biller detail, and the system may provide a single biller multiple templates  
13 from which to select.

- 14 102. The system may permit the administrator to select an archive/purge 710  
15 function, wherein the system may direct the administrator to an archive/purge  
16 section 711. In this section, the system may permit the administrator to select  
17 functions for archiving (which the system may be adapted to store as global  
18 information on the database), including archiving data to a separate table,  
19 modifying options controlling when archiving is to occur (e.g. if an invoice stays  
20 in the "Presented" or "Viewed" state for more than X days; if an invoice stays in  
21 the "Paid" state for more than X days; and/or when an invoice is closed, it may  
22 be automatically archived); and reporting against archived data. The system  
23 may provide purging features (which the system may be adapted to store as  
24 global information on the database), including purging records only from the  
25 archive table(s); modifying options controlling when to purge (e.g. purge records  
26 after X days in archive; or manual purge).
- 27 103. Upon selection by the biller system administrator of the edit banks 702 function,  
28 the system may redirect the biller system administrator to a biller bank editing  
29 section 712 for allowing the bank information associated with the biller to be  
30 edited. It is contemplated that a biller may have multiple banks with each bank  
31 having multiple bank accounts. An exemplary edit banks 712 section may be

1 separated into two sections. In the first section, the system may display the  
2 following exemplary fields (which the system may be adapted to store as global  
3 information on the database): name, address, city, state, zip code, country,  
4 country#, account # and RTN. The system may utilize a MOD9 or similar  
5 algorithm to verify valid routing numbers. In a second section, the system may  
6 display for the selected bank a “holidays” list-box populated with all bank  
7 holidays associated with this bank. Selecting an existing bank holiday from this  
8 list box may cause the system to delete the entry. Selecting a delete button may  
9 cause the system to delete the selected bank holiday. The system may provide  
10 combo-boxes for month, day and year selection. Selecting an add button may  
11 cause the system to add the selected date to the holiday list-box. If a bank is  
12 added with, or is caused to have no holidays through later modification, the  
13 system may display a warning to the user.

- 14 104. The system may permit the administrator to select a “users” 703 function,  
15 wherein the system may direct the administrator to an edit user section 713. In  
16 this section, the system may permit the administrator to add, modify or delete  
17 users associated with the current biller. At this page, the system may display  
18 the name of the biller at the top to establish the context of the edit. The system  
19 may populate a list box with the selected biller system’s user names. As the  
20 administrator clicks on each user, the system may display the user’s information  
21 in a user information section. The system may permit the administrator to add a  
22 new user to the current biller by entering information into the user information  
23 section. The system may require that the combination of last name, middle  
24 initial and first name be unique. The system may permit modify and delete  
25 operations to be performed on the currently selected user. The system may  
26 provide a checkbox for temporarily deactivating a user. The system may  
27 maintain contact information (which the system may be adapted to store as  
28 global information on the database), including, e.g., last name, first, middle,  
29 phone, fax, e-mail, e-mail2, user ID, password, confirmation, language and  
30 privilege group. The system may require certain fields for user information, such  
31 as last name, first name, e-mail and phone. The system may provide a reset

1 password button for resetting the selected user's password to the default  
2 setting. The system may automatically send an e-mail to a new user after they  
3 have been added, telling the user how to connect and logon to the system. As  
4 described above with reference to the host user modifying privilege information,  
5 the system may similarly permit a biller system administrator to access a  
6 permissions section 715 for modifying permission/privilege information (which  
7 the system may be adapted to store as global information on the database).

- 8 105. Upon selection by the biller system administrator of the event e-mails 704  
9 function, the system may direct the biller system administrator to an event e-  
10 mail section 714. In this section, the system may permit biller system users to  
11 be associated with specific system events, which associations the system may  
12 be adapted to store as global information on the database. Any time one of  
13 these specific events occurs, the system may generate an automatic e-mail and  
14 send it to the selected list of biller system users. For example, exemplary  
15 distribution list choices may include: invoices loaded successfully, invoices  
16 loaded unsuccessfully, invoice adjusted, payment authorized, payment  
17 canceled, payment completed, and payment notification. The system may  
18 display on this page a list-box that contains all biller system users currently in  
19 the selected distribution list and a list-box that contains all biller system users  
20 currently not in the selected distribution list. In one embodiment, the system  
21 may provide two buttons to allow users to be added or removed from the  
22 distribution list. The system may permit a default e-mail address to be set up  
23 for each event, e.g. the biller system administrator. The system may permit the  
24 user to remove this value and/or add to the list. The system may send an  
25 automatic e-mail to one or more biller system users when a payment is made.  
26 The system may send a summary of the payments made to each biller that has  
27 payments in the given payment run. The system may send to designated biller  
28 system users an e-mail with the following exemplary information: summary of  
29 payments made on today's date, payer name; payer number; total number of  
30 payments; and total amount of payments.

1       106. The system may further direct the biller system administrator, upon selection of  
2       the payers feature 705, to selections for performing tasks including options 716,  
3       adjustments 717, close invoices 718 and e-mail 719. Selecting the options 716  
4       task may direct the biller system administrator to a payer options 720 section,  
5       where options for a specific payer may be entered and/or edited. The system  
6       may display, at the payer options page, a list-box with all the payers related to  
7       the biller, with the system pre-selecting the most recently selected payer in this  
8       session by default. If no payer has previously been selected, then the system  
9       may not pre-select a payer in the list box. For the selected payer, the system  
10      may display the following exemplary payer options (which the system may be  
11      adapted to store as global information on the database): hide line items from  
12      invoice listing; allow payments; include signature; web site selection (which may  
13      be displayed using one or more multiple select listboxes); logo selection; payer  
14      ID; payment methods and account section (may cause the system to associate  
15      payment methods with biller account, and may include a set default button to  
16      establish the biller's default method and account); set default payment method  
17      and account; marketing message; legal text; and payer model. The system  
18      may provide a load default button to fill in all fields with the default entries. The  
19      system may provide a save default button to save the current entries as the  
20      default settings. Hitting the save button may cause the system to save the  
21      current payer's options, while hitting the cancel button may cause the system to  
22      discard any changes. Selecting the adjustments task may cause the system to  
23      direct the biller system administrator to an adjustments section 721, where the  
24      system may permit the administrator to establish adjustments available to a  
25      specific payer and establish an e-mail notification list. The system may provide  
26      a checkbox for enabling and disabling disputes. If disputes are enabled, the  
27      system may make available for selection in a listbox the adjustments that the  
28      biller will allow the payer system users to make. The system, through the  
29      adjustments listbox, may enable the actual selection of adjustments available to  
30      the payer system users. The system may make all adjustments selected be  
31      available as long as the enable disputes checkbox is checked. The system

may also provide a checkbox for e-mailing one or more biller system users on adjustments. If this option is selected, the system may enable a mailing list button for sending automatic e-mails. The system may send to designated biller system users an e-mail for each adjustment made with the following exemplary information: "the following adjustment was made by payer name on today's date"; payer number; invoice number; adjustment type; adjustment amount; and adjustment reason. If there is no address set up to receive this e-mail, the system may send an e-mail message by default to the biller system administrator. The system may permit a mailing list function 722 may be accessed by the biller system administrator for modifying mailing list settings (which may be stored as global information on the database). The system may provide a close invoice function 718 for directing the biller system administrator to a close invoice section 723 to establish invoice-closing criteria for each payer. The system may only permit invoices with the status of "paid", "presented", or "viewed" to be closed. All other invoice states may indicate payer workflow is in progress, and the system may not permit invoices having such states to be closed. At the payer invoice close page 723, the system may display a list-box with all the payers related to the biller, with the system pre-selecting the most recently selected payer in this session by default. If no payer has previously been selected, then the system may not pre-select a payer from the list-box. For the selected payer, the system may present invoice closing criteria. The system may process criteria entered during the next nightly sweep. The system may mark as closed invoices that meet the closing criteria. Selecting the e-mail 719 task may cause the system to direct the biller system administrator to a payer e-mail 724 section for associating a list of biller system users with a specific payer (which associations the system may be adapted to store as global information on the database). At the payer e-mail page 724, the system may display a list-box with all the payers related to the biller. The system may pre-select the most recently selected payer in this session by default. If no payer has previously been selected, then the system may not pre-select a payer from the list-box. For the selected payer, the system may display

1       a page having a list-box that contains all biller system users currently related to  
2       the payer and a list-box that contains all biller system users currently unrelated  
3       to the payer. The system may provide two buttons to allow users to be added or  
4       removed from the related list.

- 5       107. If the biller system administrator selects the adjustments 706 feature, the  
6       system may further direct the biller system administrator to selections for  
7       performing adjustment tasks including general 725, quantity 726, price 727, and  
8       line item allowance 728. When a new biller is created on the channel host, the  
9       system may give it a full set of the default adjustments for each of the four types  
10      (general, quantity, price, line item allowance). These system may permit these  
11      adjustments to be modified, added to, or deleted, allowing full customization by  
12      the biller. The system may provide a feature for restoring adjustments to the  
13      initial defaults. Selecting the general 725 button may cause the biller system  
14      administrator to be directed to a general adjustment codes page 729, wherein  
15      the system may permit global general adjustment codes to be edited. At this  
16      page 729, the system may display an adjustment list-box and an adjustment  
17      information area. The system may permit adjustments to be selected from the  
18      list-box to be edited or deleted. The system may permit new adjustments to be  
19      added by selecting an add button. The system may make adjustments entered  
20      here available to all of the biller's payers in the system. Exemplary associated  
21      fields may include: code and description. Selecting the quantity 726 button may  
22      cause the system to direct the biller system administrator to a quantity  
23      adjustment codes page 730, wherein the system may permit global quantity  
24      adjustment codes to be edited. At this page 730, the system may display an  
25      adjustment list-box and an adjustment information area. The system may permit  
26      adjustments to be selected from the list-box to be edited or deleted. The  
27      system may permit new adjustments to be added by selecting an add button.  
28      The system may make adjustments entered here available to all of the biller's  
29      payers in the system. Exemplary associated fields may include: code,  
30      description, threshold amount (which may only be active if "user defined" is not  
31      selected), and a "user defined" checkbox. Selecting the price 727 button may

cause the system to direct the biller system administrator to a price adjustment codes page 731, wherein the system may permit global price adjustment codes to be edited. At this page 731, the system may display an adjustment list-box and an adjustment information area. The system may permit adjustments to be selected from the list-box to be edited or deleted. The system may permit new adjustments to be added by selecting an add button. The system may make adjustments entered here available to all of the biller's payers in the system. Exemplary associated fields may include: code, description, threshold amount (which may only be active if "user defined" is not selected), and a "user defined" checkbox. Selecting the line item allowance button 728 may cause the system to direct the biller system administrator to a line item allowance adjustment codes page 732, wherein the system may permit global discount adjustment codes to be edited. At this page 732, the system may display an adjustment list-box and an adjustment information area. The system may permit adjustments to be selected from the list-box to be edited or deleted. The system may permit new adjustments to be added by selecting an add button. The system may make adjustments entered here available to all of the biller's payers in the system. Exemplary associated fields may include: code, description, amount (percentage), fixed or scaled, number of days, and a "penalty assessed" checkbox.

108. The system may permit selection of an edit export templates 733 function for allowing the biller system administrator to edit the templates used in file export in an edit export template section 734. The system may display an export templates listbox showing the present export templates. In the template settings area, the system may display all the attributes and settings of the current selected template. Selecting a template from the export templates listbox may cause the system to populate the fields of the template settings area. In this area, the system may allow the biller system user to add, modify, or delete file export templates by using a set of buttons or controls. The set of invoices to be exported may be based on the invoices that are being viewed at the time export is chosen. The system may permit the user to set that filter

1 through the filter/sort page. The template settings area may contain the  
2 following exemplary controls (which the system may be adapted to store as  
3 global information on the database): fields and export order (may contain a  
4 listbox of the available invoice fields and an ordered listbox of fields marked for  
5 export with two buttons for moving fields between listboxes; via up and down  
6 buttons, the system may allow the field export order to be changed); and file  
7 formats (a listbox that allows the file format to be selected; if ASCII is chosen a  
8 delimiter section may be displayed and the system may require the user to  
9 select field and record delimiters). The system may provide a “set default”  
10 button for allowing the user to set the current template as the default template  
11 for the file export page. By selecting file export, the system may allow the biller  
12 system user to export invoices based on an export template. In the templates  
13 listbox, the system may show the present export templates, while, in the export  
14 range, the system may permit selection of the date range criteria for including  
15 invoices in the export. In the templates list, the system may default to the  
16 template set as default from the edit export templates page; if no default  
17 template was set, the system may pre-select the first entry in the listbox. The  
18 system may provide an “export” button for performing the file export and a  
19 “cancel” button for aborting.

- 20 109. The system may provide a password/profile change button 735 for directing the  
21 biller system administrator to a password/profile change section 736 for  
22 changing password and/or profile information.

23 **Payer System Workflow**

- 24 110. Figures 8a, 8b, and 8c illustrate an exemplary payer system workflow in one  
25 embodiment of the system. When a user logs in 801 to the system using the  
26 user ID of a payer, the system may display a payer system administration or  
27 “welcome” page 802. The system may display the user's name at the top in the  
28 form of a “Welcome 'Username'” message, for personalization. The system  
29 may display at a payer system administration page key payer statistics and a  
30 list of “action items” with current counts, amounts in local currency and links to

1 the corresponding pages, as well as information about the basic functionality of  
2 the main topics. The system may also display at this page information provided  
3 by the administrative user regarding how to contact the administrative user.  
4 The current counts may include invoices due today, invoices due tomorrow,  
5 invoices that will lose a discount today, invoices that will lose a discount  
6 tomorrow, invoices past due, invoices outstanding with adjustments, total  
7 invoices, verified invoices, initiated payments, authorized payments, and  
8 pending payments. The system may provide a selection to the user for filtering  
9 and/or sorting the counts. The system may display a biller list, which may  
10 include all billers that the payer has a relationship with in the system. The  
11 system may permit the payer system user to click on any biller to get a list of  
12 invoices from that biller. The system may permit the payer system user to  
13 return to this page by clicking on a link that may be present on every page  
14 during system access. One area of the screen may contain navigation buttons  
15 grouped into categories, e.g., invoices due today 803, invoices due tomorrow  
16 804, invoices that will lose a discount today 805, invoices that will lose a  
17 discount tomorrow 806, invoices past due 807, outstanding invoices with  
18 adjustments 808, total invoices 809, and verified invoices 810, all of which may  
19 link to an invoice list page 821 to display the desired invoices. Other navigation  
20 buttons may include initiated payments 811 (which may link to the initiate  
21 payment page), authorized payments 812 (which may link to the authorize  
22 payment page), pending payments 813 (which may link to the pending  
23 payments page), administration 814 (discussed further hereinbelow at "Payer  
24 System Administration"), invoices/payments 815, reports 816, and biller  
25 directory 817. The system may expand these categories into subcategories  
26 that modify another portion of the screen. One area of the navigation frame  
27 may contain the user name (not the user ID) who is logged on. The system  
28 may allow the user to click on this link to modify his or her basic profile  
29 information. The system may provide other functionality, including a "help"  
30 button 818 for directing the user to a help section 819 and a "logout" button 820  
31 for logging the current user out of the system.

- 1       111. The system may allow the payer system user to select an option to edit the  
2           active user profile, wherein the system may direct the payer system user may  
3           be directed to a page displaying the organization name of the payer at the top,  
4           to establish the context of the current edit. The system may permit information  
5           to be maintained and edited at this page and may store the information as  
6           global information on the database, e.g., last name, first, middle, phone, fax, e-  
7           mail, e-mail2, password and confirmation. The system may require certain fields  
8           for user information, including last name, first name, e-mail and phone. The  
9           system may include this information in e-mails which may be sent through the  
10          system and may also make this information available to biller and payer system  
11          administrators.
- 12      112. If the payer system user selects invoices due today 803, invoices due tomorrow  
13           804, invoices that will lose a discount today 805, invoices that will lose a  
14           discount tomorrow 806, invoices past due 807, outstanding invoices with  
15           adjustments 808, total invoices 809, or verified invoices 810, the system may  
16           direct the payer system user to an invoice list page 821 for displaying invoices  
17           which meet the corresponding chosen parameters. At the invoice list page 821,  
18           the system may display to the payer system user invoices based on selected  
19           criteria and/or allow the payer system user to specify general search criteria for  
20           listing invoices. Depending on the selection, the system may direct the user to  
21           a "view options" page 822 for filtering and sorting. At the view options page  
22           822, the system may allow the user control over the subset of data that will be  
23           displayed and the order in which the data will be presented. To further facilitate  
24           the presentation of invoices, the system may automatically save settings  
25           associated with a specific report (which may be stored as global information on  
26           the database) and allow them to be used again the next time the user  
27           generates the report. Considering the time it may take to generate certain  
28           reports (e.g. lengthy reports), the system may also provide an option to bring  
29           this page up before running a report, to limit the scope and time. The view  
30           options page may consist of three exemplary areas: extract, sort and options.  
31           In the extract area, the system may provide the following exemplary choices: by

date (past due, eligible for discount, due within xxx days); and by status (paid invoices, adjusted invoices, unpaid invoices, paid through another source); and by biller (all biller, specific biller); and by attribute range between xxx and yyy (none, invoice numbers, store / location, purchase orders, purchase request number, invoice issue dates, dollar amount, bill of lading numbers, receiving location zipcodes, invoice aging). The system may also provide the ability to search for invoice number, store or location number, routing number and P.O. number by using wildcards. The system may provide a sort area to allow returned results to be sorted in ascending or descending order according to the following exemplary criteria: due date, invoice number, invoice date, purchase order number, net amount due, store or location number, and invoice aging. In one embodiment, the system may determine sorting criteria and order by a sort order combo box, which may default to ascending, and three sort criteria boxes, the first of which may default to due date, while the rest may default to no sort criteria (spaces). The system may provide an options area with the following exemplary choices: define page size (for displaying invoices in a paging method), remember and use previous settings, and show view options page before presentation. The system may be adapted to store extract, sort, and options data as global information on the database.

113. The system may allow a payer system user to select an option 821 to list invoices matching specified criteria. The system may display at this screen the filter/sort criteria that are in use for this display. The system may display invoices using a paging concept (i.e. 1 – 20 of 362). When displaying invoices, the system may remove any existing navigation area, so as to optimize the invoice display area. In one embodiment, the system may display a page separated into two sections, with the header section containing non-scrolling data and/or buttons and the body section that scrolls as necessary, depending upon the width of the browser window and the number of invoices being displayed. The header section may contain the following elements:
114. The user's selection criteria, i.e., All Invoices – Past due.

- 1       115. The display range text in the format of first – last of maximum, i.e., 1-20 of 200.
- 2       116. “Next ‘n’” may cause the system to navigate the user to the next “n” invoices,  
3           i.e., “Next 20”. If the last “n” invoices are currently being displayed the system  
4           may disable the “Next” button.
- 5       117. “Previous ‘n’” may cause the system to navigate the user to the previous “n”  
6           invoices, i.e., “Previous 20”. If the first “n” invoices are currently being displayed  
7           the system may disable the “Previous” button.
- 8       118. “All” may cause the system to change the mode from displaying a page of  
9           invoices to displaying all invoices and the system may label the button “Page”,  
10          i.e., 1-200 of 200. If the “Page” button is selected, the system may display at  
11          this page the first “n” invoices, and the system may label the button “All”.
- 12      119. “Back” may cause the system to return to the previous screen, step, or function.
- 13      120. “Search” may cause the system to perform a search in the current invoice list by  
14          using the “Find” feature. The system may permit only the invoices currently  
15          being displayed to be searched. The system may allow the user to type a string  
16          to search for before selecting the “Search” button. The system may search each  
17          invoice for the specified string. If a match is found, the system may scroll the  
18          invoice record into view and select the text found. Selecting “Search” again may  
19          cause the system to find the next instance of the string. The system may permit  
20          wildcard searches.
- 21      121. “Show Selected” may cause the system to display all invoices that have been  
22          manually checked. In the last column of the invoice list, the system may allow a  
23          user to select individual invoices. While the user remains on this page, the  
24          system may maintain in a list all invoices that are marked as selected. If the  
25          user switches the context of this view, the system may not remove any  
26          selection made by the user. Clicking on the “Show Selected” button may cause  
27          the system to display all the invoices the user has selected. The system may  
28          change this button may change to either “Page” or “All”, depending on the state  
29          of the selection when this button was pressed. Selecting this button again may

1 cause the system to return the invoice list to its previous mode. The system  
2 may display all Selected invoices, even if they exceed the page limit.

3 122. "Paid Through Another Source" may be provided by the system as an option for  
4 the payer system user to mark an invoice as closed by selecting desired  
5 invoices and clicking on the "Paid through another source" button. Once this  
6 occurs, the system may, for the invoices in question, update their audit trail to  
7 reflect that they were paid outside the system, and then change their status to  
8 "Closed".

9 123. In the body section, the system may display all invoices in table format. The  
10 width of the table columns may be proportional to the width of the browser  
11 window. If the browser window is narrowed, the system may decrease column  
12 widths appropriately and wrap text within each column, as necessary. If an  
13 invoice has adjustments, the system may highlight that line in color to indicate  
14 this fact. The system may link the invoice number field to the invoice detail  
15 page. The system may link the status field to the invoice history page, at which  
16 the system may display a full status history for the selected invoice. By default,  
17 the system may display the following exemplary columns: biller name (and/or  
18 logo(s)), invoice number, due date, status, net amount due, amount to pay, and  
19 select. The payer system administrator may optionally elect to display additional  
20 columns (e.g., P.O. number, P.O. requisition number, store number) by setting  
21 them in the payer profile (which may be stored as global information on the  
22 database).

23 124. The system may permit the payer system user to select an option 823 to display  
24 the details of a selected invoice, which may cause the system to direct the user  
25 to an invoice detail section 610. The system may use one or more  
26 predetermined, customizable and/or selectable template schema to format the  
27 payer detail, and the system may provide a single payer multiple templates from  
28 which to select. The system may present detail using a selected language  
29 associated with the selected payer and/or user (which the system may be  
30 adapted to store as global information on the database). The invoice detail

1 page may contain various sections. One section may display summary  
2 information for the selected invoice, information about the payer, information  
3 about the particular invoice, and/or information about the biller. The system  
4 may provide selectable buttons for obtaining more information about the current  
5 invoice, e.g., items 831, messages 832, e-mail 833, status 834, shipping info  
6 835, discounts 836, and notes 837. The system may display line items that  
7 have been adjusted in a different color. Upon selection by a user of the items  
8 button 831, the system may toggle the header view from showing a detailed  
9 header description to allowing the user to perform basic search operations on  
10 the details of this invoice. The items button 831 may cause the system to toggle  
11 to header. Clicking on the header button may cause the system to return to the  
12 previous view, thereby providing more space for viewing details on the current  
13 page, as follows. Another section may contain the line items that make up the  
14 invoice. The system may color code highlight line items that have been  
15 adjusted. Each line may have a clickable line number. Clicking a line item's  
16 number may cause the system to expand the line to show its detail. Clicking a  
17 particular adjustment may cause the system to display a window with details  
18 about that specific adjustment. Another section may contain the invoice  
19 summary. For both the original amount billed and the amount to pay, the  
20 system may calculate and display the following: gross total invoice; time  
21 conditional discount; other discount / charge; a general adjustments link (which  
22 may allow the general adjustment for the current invoice to be entered or  
23 edited); sales tax; other tax; and net amount due.

- 24 125. The system may, upon selection of the messages button 832, display a new  
25 browser window 842 displaying any messages defined by the biller system  
26 administrator for this payer. Selection of the discounts button 834 may cause  
27 the system to open a separate browser window 846 displaying additional  
28 discount information for the current invoice, including, e.g., time conditional  
29 discount %; time conditional discount amount; time conditional discount date;  
30 invoice date; and unconditional discount or charge. Selection of the shipping  
31 info button 835 may cause the system to display additional shipping information

1 for this invoice in a separate browser window 845, including, e.g., ship to  
2 location, date shipped, carrier, bill of lading number, terms, units, unit code,  
3 weight, volume, package dimensions, package contents, and notes. In addition  
4 to the invoice specific shipping information, the system may list courier websites  
5 specified by the biller system administrator as links to the websites of the  
6 shipping companies, for shipment tracking or other purposes. Selection of the  
7 notes button 837 may cause the system to open a separate browser window  
8 847 containing a list of entered notes for this invoice. In the separate browser  
9 window, the system may allow the user to enter new notes into a new note  
10 textbox and save them by clicking an "add note" button. Clicking a "cancel"  
11 button may cause the system to return the user to the invoice detail page and  
12 discard any new notes. Selection of the e-mail button 833 may cause the  
13 system to open a separate browser window 843 with a new e-mail referencing  
14 the selected invoice. The system may allow the user to enter an e-mail  
15 message to selected users about the current invoice. The system may send e-  
16 mail to the recipients that are picked from the recipients list (which the system  
17 may be adapted to store as global information on the database), the contents of  
18 which may be based on the e-mail distribution list set up by the biller system  
19 administrator. Selection of the status button 834 may cause the system to open  
20 a separate browser window 844 displaying a page containing the status history  
21 for the selected invoice, including, e.g., date / time, user ID, and user name and  
22 status. The system may further provide adjustment buttons, e.g., general  
23 adjustment 838, quantity adjustment 839, price adjustment 840, and allowance  
24 841, at the invoice detail 823 section. The system may permit a general  
25 adjustment button 838 to be selected to open a separate browser window 848  
26 containing general adjustment information for this invoice. This information may  
27 be read only and may include the following exemplary items of information:  
28 adjustment amount, reason code, and notes. The system may permit a quantity  
29 adjustment button 839 to be selected for a specific invoice line item, which may  
30 cause the system to open a separate browser window 849 containing quantity  
31 adjustment information for that line item. This information may be read only and

may include the following exemplary items of information: adjustment quantity, reason code, and notes. The system may permit a price adjustment button 840 to be selected for a specific invoice line item, which may cause the system to open a separate browser window 850 containing price adjustment information for that line item. This information may include the following exemplary items of information: new price, reason code, and notes. The system may permit an allowance button 841 to be selected for a specific invoice line item, which may cause the system to open a separate browser window 851 containing allowance information for that line item. This information may be read only and may include the following exemplary items of information: allowance amount, reason code, and notes.

126. The system may make other options available to the payer system user for selection, e.g. an items button for displaying the invoice details in item view. The system may, upon selection of such a button, remove the header from the invoice details, and all but the net amount due field of the footer, thereby allowing more screen space to be used for the presentation of invoices. The system may provide a search function for performing a search in the current invoice list. The system may permit only the invoices currently being displayed to be searched. The system may allow the user to type a string to search for before selecting the "Search" button. The system may search each invoice for the specified string. If a match is found, the system may scroll the invoice record into view and select the text found. Selecting "Search" again may cause the system to find the next instance of the string. The system may permit wildcard searches. The system may provide clickable line numbers in the items view line, whereby upon clicking a line item's number, the system may expand the line to show its invoices, and clicking a particular adjustment may cause the system to bring up a window with details about that specific adjustment.
127. The system may provide other selectable options, including a website button for opening a separate browser window containing links to biller-specific websites, and a biller info button for displaying a new browser window containing the biller information supplied for the current payer.

- 1       128. From the perspective of the payer system user, the system may identify an  
2            invoice as having one of the following exemplary states: presented, viewed (an  
3            invoice may be considered “viewed” when a invoice display query is built with  
4            the invoice included; the user does not necessarily need to actually see the  
5            invoice to have it considered viewed), verified (an invoice that is in this state  
6            may be rolled back to viewed given the user has the permission to verify),  
7            payment initiated, payment authorized, payment pending (an invoice in this  
8            state may be rolled back to verified given the user has the permission to  
9            authorize payment), paid, and closed.
- 10      129. As illustrated in the payer invoice/payments workflow diagram of Figures 9a and  
11            9b, if the payer system user selects invoice/payments 815, the system may  
12            direct him or her to further select from among invoice/payment selections, which  
13            may include, e.g., review invoice 901, initiate payment 902, approve/verify  
14            invoice 903, authorize payment 904, pending payment 905, payment history  
15            906, and file export 907.
- 16      130. Selecting the review invoices 901 function may cause the system to direct the  
17            user to an invoice list 908, with appropriate links to invoice status 909, detail  
18            823, and sorting 910 pages. The invoice list 908, status 909, detail 823, and  
19            sorting 910 pages may be functionally identical to those described above with  
20            reference to Figure 8b, at ciphers 821-851.
- 21      131. Selecting the approve/verify invoices 903 function may cause the system to  
22            direct the user to an approve/verify page 911 containing an invoice list, with  
23            appropriate links to invoice status 923, detail 823, and sorting 913 pages. The  
24            invoice list, status 923, detail 823, and sorting 913 pages may be functionally  
25            identical to those described above with reference to Figure 8b, at ciphers 821-  
26            851. Via the invoice list shown, the system may permit the payer system user  
27            to view all invoices in the system that have not yet been approved for payment,  
28            subject to the criteria set in the view options page. The system may provide  
29            appropriate functionality to approve an individual invoice, approve a selection of  
30            invoices, or approve all invoices in the current extract. For any invoice in the

1                   extracted set, the system may permit the user to view the corresponding invoice  
2                   detail page 823 or the invoice status page 923. Invoices included on this page  
3                   may indicate one of the following exemplary states: presented, viewed, or  
4                   adjusted. The system may provide appropriate functionality to confirm approval  
5                   of an individual invoice or group of invoices. The system may permit further  
6                   selection of an “approve invoices” or “verify confirm” 914 page to permit the  
7                   user to confirm the requested action.

- 8       132. Selecting the initiate payment 902 function may cause the system to direct the  
9                   user to an initiate payment page 915 containing an invoice list, with appropriate  
10                  links to invoice status 909, detail 823, and sorting 910 pages. The invoice list,  
11                  status 909, detail 823, and sorting 910 pages may be functionally identical to  
12                  those described above with reference to Figure 8b, at ciphers 821-851. Via the  
13                  invoice list shown, the system may permit the payer system user to view all  
14                  invoices in the system that have been approved for payment, subject to the  
15                  criteria set in the view options page. The system ma provide appropriate  
16                  functionality to initiate payment for an individual invoice, a selection of invoices,  
17                  or all invoices in the current extract. For any invoice in the extracted set, the  
18                  system may also permit the user to view the corresponding invoice detail page  
19                  823 or the invoice status page 909. The system may display an “amount to  
20                  pay” column, the amount shown being net of all applied credits and  
21                  adjustments. The system may provide appropriate functionality to perform a  
22                  cancel, which action may cause the system to roll back the status to viewed,  
23                  detaching any applied credits if necessary. The system may permit the user to  
24                  toggle between the discount date and the invoice due date. The system may  
25                  set payment options to the default value established for the current biller / payer  
26                  relationship. The system may page payments to accurately represent how the  
27                  payment will be submitted. If the selection contains applied credit notes, the  
28                  system may render each in a separate payment. The system may further permit  
29                  the user to select a payment initiation selection page 916 to confirm the  
30                  requested action, i.e. to confirm payment initiation of selected invoices in the  
31                  system.

- 1       133. Selecting the authorize payment function 904 may cause the system to direct  
2           the user to an authorization page 917 containing an invoice list, with appropriate  
3           links to invoice status 912, detail 823, and sorting 913 pages. The invoice list,  
4           status 912, detail 823, and sorting 913 pages may be functionally identical to  
5           those described above with reference to Figure 8b, at ciphers 821-851. Via the  
6           invoice list shown, the system may permit the payer system user to view all  
7           invoices in the system that have had payment initiated, subject to the criteria set  
8           in the view options page. The system may permit the user to click on any check  
9           number to view details for that payment group. The system may further permit  
10          the payer system user to select check boxes next to payments to select those  
11          payments, and to click on an "authorize" button to authorize those selected  
12          payments. The system may further permit the user to click on an "authorize all"  
13          button to authorize all payments listed. The payment method may be the  
14          payment option selected for this transaction, and the initiator may be the user  
15          name of the user who authorized the payment. The system may permit the  
16          authorize stage to be automatically bypassed if the payment amount is less  
17          than a pre-selected threshold amount. The system may further permit the user  
18          to select an authorize payment confirmation page 919 to confirm the requested  
19          action, i.e. to confirm payment authorization of selected invoices in the system.
- 20      134. Selecting the pending payments 905 function may cause the system to direct  
21           the user to a pending payment page 918 containing an invoice list, with  
22           appropriate links to invoice status 912, detail 823, and sorting 913 pages. The  
23           invoice list, status 912, detail 823, and sorting 913 pages may be functionally  
24           identical to those described above with reference to Figure 8b, at ciphers 821-  
25           851. Via the invoice list shown, the system may permit the payer system user  
26           to view all pending payments in the system subject to the criteria set in the view  
27           options page. The system may permit the user to click on any check number to  
28           view details for that payment group. The system may further permit the payer  
29           system user to select check boxes next to payments to select those payments,  
30           and to click on a "cancel" button to cancel the selected payments. The system  
31           may further permit the user to click on "cancel all payments" to cancel all

1 payments listed. Canceling a pending payment may cause the system to roll  
2 the transaction back to the “verified” invoice state. The system may further  
3 permit the user to select a cancellation confirmation page 920 to confirm the  
4 requested action, i.e. to confirm canceling pending payments for selected  
5 invoices in the system.

- 6 135. Selecting the payment history 906 function may cause the system to direct the  
7 user to a payment history page 921, wherein the user may view all paid  
8 invoices in the system, referencing the corresponding check number, subject to  
9 the criteria set in the view options page. The system may provide an invoice  
10 history page 922, whereby the system may display an invoice history line for  
11 each invoice that meets the view options criteria. Selecting an invoice number  
12 link may cause the system to display the corresponding invoice detail page  
13 (e.g., as shown and described with respect to cipher 823 of Figure 8b). The  
14 system may provide an invoice status link for displaying a corresponding  
15 invoice status page (e.g. as shown and described with respect to cipher 844 of  
16 Figure 8b).

- 17 136. The system may permit the payer system user to select an export files function  
18 907, i.e., to download data directly from the server, bypassing the need to have  
19 the data flow through a transmission to the payer system user. Selecting the  
20 export files option 907 may cause the system to direct the user to the invoice  
21 export section 923, from which the user may either edit export templates or  
22 export files. Upon selection of edit export templates, the system may allow the  
23 payer system user to edit the templates used in file export. An export templates  
24 listbox may shows the present export templates while a template settings area  
25 may contain all the attributes and settings of the current selected template.  
26 Upon selection of a template from the export templates listbox, the system may  
27 populate the fields of the template settings area. In this area, the system may  
28 allow the payer system user to add, modify, or delete file export templates  
29 (which the system may be adapted to store as global information on the  
30 database) by using a set of buttons or controls. The set of invoices to be  
31 exported may be based on the invoices that are being viewed at the time export

1       is chosen. The system may permit the user to set that filter through the  
2       filter/sort page. The template settings area may contain the following  
3       exemplary controls (which the system may be adapted to store as global  
4       information on the database): document type, document status, include  
5       (headers and/or line items), fields and export order (may contain a listbox of the  
6       available invoice fields and an ordered listbox of fields marked for export with  
7       two buttons for moving fields between listboxes; up and down buttons may  
8       allow the field export order to be changed), file formats (a listbox that allows the  
9       file format to be selected; if ASCII is chosen, the system may display a  
10      delimiter section and require the user to select field and record delimiters; file  
11      formats may include X12 810, "XML 810", PayBase™, and CSV). The system  
12      may provide a "set default" button for allowing the user to set the current  
13      template as the default template for the file export page. Upon selecting file  
14      export, the system may allow the payer system user to export invoices based  
15      on an export template. In the templates listbox, the system may show the  
16      present export templates while the export range may allow the user to select  
17      the date range criteria for including invoices in the export. The system may  
18      provide a "today" checkbox, for aiding in setting the to bounding date to the  
19      current date. An "export" button may cause the system to perform the file  
20      export, while a "cancel" button may cause the system to abort.

- 21      137. It is noted that the system may further permit a payer system user not only to  
22      view adjusted invoices from the invoice detail screen (e.g. cipher 823, as shown  
23      in Figure 8b and described above), but also to make adjustments to an invoice.  
24      In this scenario, from a user interface perspective, the system may allow the  
25      original amount to remain, but may change the "amount to pay" to "amount to  
26      adjust". At the bottom of the invoice, the system may add a new line that  
27      reflects the unapproved amount to pay, subject to any required approval. The  
28      system may also allow credit and debit notes to be entered by a payer system  
29      user, whereby credit notes may be entered by a user and/or handled by the  
30      system as invoices with a negative dollar amount, and debit notes entered by a  
31      user and/or handled by the system as invoices. Thus, the system may permit

credit requests to be entered in the same manner as adjustments are entered. If a credit request is issued, the system may send an e-mail to the distribution list for this event, referencing the invoice in question (i.e. invoice number, date, paying company, etc.), amount of credit requested, type of adjustment, adjustment code, and description of need for credit. After an invoice load, the system may execute a process that sets negative dollar invoices to a "verified" status, so that they will appear on the "initiate payment" list. The system may not roll back invoices with a "verified" status and a negative dollar amount to "presented" or "viewed" status. The system may make a report available to certain users listing all outstanding credit notes, including quantity and total dollar amount.

138. As shown in the workflow diagrams of Figures 8 and 10, the system may permit the payer system user to select a reports option 816, which may cause the system to display subcategories that correspond to the available reports for selection. Exemplary reports may include: cashflow forecasting 1001, payment history 1002, security administrator statistics 1003, payer profile 1004, invoice summary 1005, discount 1006, returned items 1007, outstanding invoice statistics 1008, and modified invoice summary 1009. The system may permit the user to select from among various reporting options and/or filters 1010 (which the system may be adapted to store as global information on the database), and the system may then generate a report for viewing and/or printing at a report page 1011.
139. As shown in the workflow diagram of Figures 8a, 8b, and 8c, the system may permit a payer system user to select a biller directory option for displaying a screen containing options which, when selected, cause the system to direct the user to pages for viewing biller websites and/or e-mail addresses 860 and a biller directory 861 (i.e. a list of available billers in the system). From the biller directory 861, clicking on a biller's company name may cause the system to bring the user to a URL set by the biller system administrator.

# Payer System Administration Workflow

- 2 140. Figure 11 illustrates an exemplary payer system administration workflow in one  
3 embodiment of the system. From the administration 1100 screen, the system  
4 may permit a payer system administrator to select from among functions  
5 including, e.g., edit payer profile 1101, edit banks 1102, edit users 1103, edit  
6 event e-mails 1104, edit biller agreement 1105, and password change 1106.

7 141. Upon selection by the payer system administrator of the edit payer profile 1101  
8 function, the system may redirect the payer system administrator to a payer  
9 profile section 1107 for editing the payer's profile information. The system may  
10 permit company data to be entered and/or edited for the following exemplary  
11 fields (which the system may be adapted to store as global information on the  
12 database): name, address, city, state, zip, country, SIC code, TIN, organization  
13 type, show invoice list columns, language for local country presentation, and  
14 currency for payment. The system may provide additional functionality for  
15 displaying an "instant payment" interface and a default settlement dates  
16 selector. At the instant payment interface, the system may permit the  
17 administrator to edit the company's instant payment terms that are used for  
18 payment of invoices in the system. The system may allow a payer system  
19 administrator to establish a threshold payment amount for instant payment. If an  
20 invoice comes in with a value less than the threshold amount, the system may  
21 be adapted to immediately initiate and authorize the invoice. When the 810 is  
22 loaded, if an invoice is below the threshold amount, the system may  
23 immediately create a payment, place it in the pending queue, and initiate an  
24 audit trail. Instant payment data (which the system may be adapted to store as  
25 global information on the database) may include the following exemplary fields:  
26 Instant payment (enabled/disabled), threshold amount, default account, default  
27 method of payment, and default settlement date (due date or discount date).  
28 The default settlement date may cause the system to provide additional  
29 functionality for the payer of having the settlement date by default be the due  
30 date to receive discounts. The system may provide the user the ability to  
31 change that date.

- 1       142. Upon selection by the payer system administrator of the edit banks 1102  
2                  function, the system may redirect the payer system administrator to a payer  
3                  bank editing section 1109 for allowing the bank information associated with the  
4                  payer to be edited. It is contemplated that a payer may have multiple banks  
5                  with each bank having multiple bank accounts. An exemplary edit banks 1109  
6                  section may be separated into three sections. In the first section, the system  
7                  may display a list-box containing all the banks associated with the current  
8                  payer. Selecting a bank from this list may cause the system to set the context  
9                  for all other sections and fields of the page. For the selected bank, the system  
10                 may display in a second section the following exemplary fields (which the  
11                 system may be adapted to store as global information on the database): name,  
12                 address, city, state, zip code, country, country#, account # and RTN. The  
13                 system may use a MOD9 or similar algorithm to verify valid routing numbers.  
14                 The system may provide a delete button, which may cause the system to  
15                 display a confirmation message before deleting the selected bank. Selecting a  
16                 modify button may cause the system to update the existing bank information  
17                 with the modified data. Selecting an add button may cause the system to add  
18                 the current bank information as a new bank. The system may require that the  
19                 bank name and account # be unique. Pressing a “set default” button may cause  
20                 the system to set the current bank as the default bank for making payments. In  
21                 a third section, the system may display for the selected bank a “holidays” list-  
22                 box populated with all bank holidays associated with this bank. Selecting an  
23                 existing bank holiday from this list box, followed by the selection of a “delete”  
24                 button, may cause the system to delete the selected bank holiday. The system  
25                 may provide combo-boxes for month, day and year selection. Selecting an add  
26                 button may cause the system to add the selected date to the holiday list-box. If  
27                 a bank is added with, or is caused to have no holidays through later  
28                 modification, the system may display a warning to the user. The system may  
29                 be adapted to store holiday data as global information on the database.
- 30       143. The system may permit a payer system administrator to select a “users” 1103  
31                  function, wherein the system may direct the administrator to an edit user section

1       1110. In this section, the system may permit the administrator to add, modify or  
2       delete users associated with the current payer. At this page, the system may  
3       display the name of the payer at the top to establish the context of the edit. The  
4       system may populate a list box with the selected payer system's user names.  
5       As the administrator clicks on each user, the system may display the user's  
6       information in a user information section. The system may permit the  
7       administrator to add a new user to the current payer by entering information into  
8       the user information section. The system may require that the combination of  
9       last name, middle initial and first name be unique. The system may permit  
10      modify and delete operations to be performed on the currently selected user.  
11      The system may provide a checkbox for temporarily deactivating a user.  
12      Contact information (which the system may be adapted to store as global  
13      information on the database) may be maintained, including, e.g., last name,  
14      first, middle, phone, fax, e-mail, e-mail2, user ID, password and confirmation.  
15      The system may require certain fields for user information, such as last name,  
16      first name, e-mail and phone. The system may provide a reset password button  
17      for resetting the selected user's password to the default setting. The system  
18      may automatically send an e-mail to a new user after they have been added,  
19      telling the user that they have 24 hours to log in and change their password or  
20      the account will be disabled (e.g. where the password is set to the default of  
21      user's last name; the system may permit accounts to be re-enabled by a payer  
22      system administrator). The e-mail may also tell the user how to connect and  
23      logon to the system. The system may provide an "assigned billers" button for  
24      accessing the edit assigned billers page 1111, where the administrator may  
25      assign billers to the current user. At this page, the system may display the  
26      name of the payer and user at the top to establish the context of the edit. At  
27      this page, the system may display a list-box that contains all billers currently  
28      assigned to the current user and a list-box that contains all billers currently not  
29      assigned to the current user. The system may provide two buttons to allow  
30      billers to be added or removed from the assigned list. The system may provide  
31      a "permissions" button for permitting access to the permissions page 1112,

1       wherein the system may permit a user's permission scope to be narrowed to an  
2       organizational subset of the assigned biller. At this page, the system may allow  
3       the administrator to modify permissions associated with the current user. At this  
4       page, the system may display the name of the biller and user at the top to  
5       establish the context of the edit. At this page, the system may display a list of  
6       permissions available to the currently selected user. The system may determine  
7       the permissions available by the permissions available to the current  
8       administrator. Permissions (which the system may be adapted to store as  
9       global information on the database) may be inherited. The system may display  
10      in a list of permissions the organizational defined nodes. A single node may be  
11      assigned to the user. By default, a user may have full permissions. The system  
12      may permit the desired permission set to be selected for the user and then  
13      saved with a "save" button. The system may provide a "cancel" button for  
14      exiting and discarding all changes. The system may provide a number of pre-  
15      defined payer privilege profiles to simplify the security model. The system may  
16      permit the administrator user to choose one of these to give a new user a  
17      particular set of permissions. From there, the system may allow permissions for  
18      that user to be altered. Exemplary pre-defined payer privilege profiles (which  
19      may be stored as global information on the database) may include:

- 20     144. Security Administrator: May have all payer profile and administration  
21       permissions, including the ability to set-up and delete ID's, bank accounts and  
22       the payer profile itself. The system may not allow this ID to be connected to any  
23       billers or any processing permissions. The system may permit this ID access to  
24       the security administration report only. The system may permit this ID only to be  
25       set-up by the system SuperUser.
- 26     145. Receiving Supervisor: May be provided with a button called "adjust an invoice".  
27       With this new button, the system may permit a receiving administrator to be  
28       able to review an invoice and make changes. However, the system may restrict  
29       change permissions to quantity adjustments only. The system may link or map  
30       this type of ID to an individual biller or group of billers.

- 1       146. Purchasing Manager: May be provided with the buttons for list all invoices;  
2              approve invoices (keeping all adjustment capabilities intact); pending payments  
3              without the cancel payment privilege; invoice history and biller directories. The  
4              system may permit all these permissions to be filtered by biller if the ID were  
5              assigned to a particular biller or subset of billers.
- 6       147. Payables Administrator: May have permissions for initiate payments, with one  
7              new feature, the ability to create a general invoice adjustment only prior to  
8              creating a payment order; pending payments without the cancel payment  
9              privilege and payment history. The system may permit all these buttons to be  
10             filtered by bank account and biller if the ID were assigned to a particular subset  
11             of bank accounts and/or billers. The system may assign this ID the following  
12             reports: return items.
- 13      148. Payables Manager: May have permissions for authorize payments; pending  
14             payments with cancel payment permissions; payment history; invoice history;  
15             payer profile and biller directories. The system may allow this role to be filtered  
16             using dollar amount and may assign this ID the following reports: return items.
- 17      149. Controller: May have permissions for list all invoices; pending payments without  
18             cancel payment permissions; payment history; and invoice history. The system  
19             may assign this ID the following reports: cashflow forecasting; outstanding  
20             invoices; discount management; adjusted invoice history and security  
21             administrator
- 22      150. Cash Manager: May have permissions for pending payments without cancel  
23             payment permissions. The system may assign this ID the following reports:  
24             cashflow forecasting report.
- 25      151. Payables Systems Administrator: May be responsible for managing the daily  
26             file export routine for both unpaid invoices and payments.
- 27      152. Upon selection by the payer system administrator of the event e-mails 1104  
28             function, the system may redirect the payer system administrator to an event e-  
29             mail section 1113. In this section, the system may permit a list of payer system

1 users to be associated with specific system events. Any time one of these  
2 specific events occurs, the system may generate an automatic e-mail and send  
3 it to the selected list of payer system users. For example, exemplary  
4 distribution list choices may include: invoices loaded successfully, invoices  
5 approved, payment initiated, payment authorized, payment canceled, and  
6 payment completed. The system may display at the this page a list-box that  
7 contains all payer system users currently in the selected distribution list and a  
8 list-box that contains all payer system users currently not in the selected  
9 distribution list. In one embodiment, the system may provide two buttons to  
10 allow users to be added or removed from the distribution list. The system may  
11 allow a default e-mail address to be set up for each event, e.g. the payer  
12 system administrator.

- 13     153. Selecting edit biller agreement 1105 may cause the system to direct the payer  
14       system administrator to an edit biller agreement page 1114, from which the  
15       payer system administrator may access such exemplary pages as biller  
16       organization 1115, options 1116, and biller e-mail 1117.
- 17     154. The system may provide a biller organization page 1115 to address the  
18       enterprise organizational model, the goal being to simulate the business  
19       structure of an enterprise so that the proper people can have access to and see  
20       the appropriate information. Although business organizations are hierarchical  
21       by definition, this structure may be too complex for the intended system  
22       implementation. Moreover, much of what makes up an organizational hierarchy  
23       is not passed as an attribute of an invoice transaction. Instead, what may be  
24       implemented supports the specificity of the hierarchical organization, while at  
25       the same time assuming no structure. For example, a biller organization might  
26       consist of company, department, region, division or store units. Assuming that  
27       these fields are populated within the invoice transactions of the system, the  
28       system may permit permission sets to be defined, each permission set being for  
29       assigning and establishing data access rights to specific users. Each  
30       permission set may contain one or more uniquely defined combinations. Three  
31       exemplary permission sets might be: Set #1 (Store #1, Store #2, Store #3); Set

#2 (Store #4, Store #5, Store #6); and Set #3 (Division #1, Division #2). At the biller's organization page, the system may display a list-box containing all the billers related to the current payer. The system may pre-select by default the most recently selected biller in this session. If no biller has previously been selected, then the system may not pre-select any biller from the list-box. For the selected biller, the system may display the list of defined organizational elements or permission sets. The system may provide buttons to add, remove and modify an entry, and may further provide an edit control to allow editing of the name of the entry. The system may display a second list-box containing the specific data values that make up the organizational element for the selected biller. A data value may be made up of the field identifier and the field value. The system may provide a combo-box that allows the user to select the field identifier, and the system may provide an edit control to allow the user to enter the field value. The system may provide buttons to add, remove and modify an entry from this list. The system may be adapted to store biller organization data as global information on the database.

155. Selecting the options function may cause the system to allow the payer system administrator to establish options for a specific biller using a biller options page 1116. At the biller options page, the system may display a list-box containing all the billers related to the payer. The system may pre-select by default the most recently selected biller in this session. If no biller has previously been selected, the system may not pre-select any biller from the list-box. For the selected biller, the system may display the biller options. Exemplary biller options may include: payment methods and account.
156. Selecting the biller e-mail function may cause the system to allow the payer system administrator to associate a list of payer system users with a specific biller using a biller e-mail page 1117. At the biller e-mail page, the system may display a list-box with all the billers related to the payer. The system may pre-select the most recently selected biller in this session by default. If no biller has previously been selected, the system may not pre-select any biller from the list-box. For the selected biller, the system may display at this page a list-box that

1 contains all payer system users currently related to the biller and a list-box that  
2 contains all payer system users currently unrelated to the biller. The system  
3 may provide two buttons to allow users to be added or removed from the  
4 related list. The system may be adapted to store the foregoing associations as  
5 global information on the database.

- 6 157. The system may provide a password change button 1106, for directing the  
7 payer system administrator to a password change section 1120 for changing  
8 password information.

9 **Alternative Embodiments**

- 10 158. It will be appreciated by those skilled in the art that although the functional  
11 components of the exemplary embodiments of the system of the present  
12 invention described herein may be embodied as one or more distributed  
13 computer program processes, data structures, dictionaries or other stored data  
14 on one or more conventional general purpose computers (e.g. IBM-compatible,  
15 Apple Macintosh, and/or RISC microprocessor-based computers), mainframes,  
16 minicomputers, conventional telecommunications (e.g. modem, DSL, satellite  
17 and/or ISDN communications), memory storage means (e.g. RAM, ROM) and  
18 storage devices (e.g. computer-readable memory, disk array, direct access  
19 storage) networked together by conventional network hardware and software  
20 (e.g. LAN/WAN network backbone systems and/or Internet), other types of  
21 computers and network resources may be used without departing from the  
22 present invention. One or more networks discussed herein may be a local area  
23 network, wide area network, internet, intranet, extranet, proprietary network,  
24 virtual private network, a TCP/IP-based network, a wireless network, an e-mail  
25 based network of e-mail transmitters and receivers, a modem-based telephonic  
26 network, an interactive telephonic network accessible to users by telephone, or  
27 a combination of one or more of the foregoing.

- 28 159. The invention as described herein may be embodied in a computer residing on  
29 a network transaction server system, and input/output access to the invention  
30 may comprise appropriate hardware and software (e.g. personal and/or

1 mainframe computers provisioned with Internet wide area network  
2 communications hardware and software (e.g. CQL-based, FTP, Netscape  
3 Navigator<sup>TM</sup> or Microsoft Internet Explorer<sup>TM</sup> HTML Internet browser software,  
4 and/or direct real-time TCP/IP interfaces accessing real-time TCP/IP sockets)  
5 for permitting human users to send and receive data, or to allow unattended  
6 execution of various operations of the invention, in real-time and/or batch-type  
7 transactions. Likewise, the system of the present invention may be a remote  
8 internet-based server accessible through conventional communications  
9 channels (e.g. conventional telecommunications, broadband communications,  
10 wireless communications) using conventional browser software (e.g. Netscape  
11 Navigator<sup>TM</sup> or Microsoft Internet Explorer<sup>TM</sup>). Thus, the present invention may  
12 be appropriately adapted to include such communication functionality and  
13 internet browsing ability. Additionally, those skilled in the art will recognize that  
14 the various components of the server system of the present invention may be  
15 remote from one another, and may further comprise appropriate  
16 communications hardware/software and/or LAN/WAN hardware and/or software  
17 to accomplish the functionality herein described.

- 18 160. Each of the functional components of the present invention may be embodied  
19 as one or more distributed computer program processes running on one or  
20 more conventional general purpose computers networked together by  
21 conventional networking hardware and software. Each of these functional  
22 components may be embodied by running distributed computer program  
23 processes (e.g., generated using "full-scale" relational database engines such  
24 as IBM DB2<sup>TM</sup>, Microsoft SQL Server<sup>TM</sup>, Sybase SQL Server<sup>TM</sup>, Oracle 7.3<sup>TM</sup>,  
25 or Oracle 8.0<sup>TM</sup> database managers, and/or a JDBC interface to link to such  
26 databases) on networked computer systems (e.g. comprising mainframe and/or  
27 symmetrically or massively parallel computing systems such as the IBM SB2<sup>TM</sup>  
28 or HP 9000<sup>TM</sup> computer systems) including appropriate mass storage,  
29 networking, and other hardware and software for permitting these functional  
30 components to achieve the stated function. These computer systems may be  
31 geographically distributed and connected together via appropriate wide- and

1 local-area network hardware and software. In one embodiment, program data  
2 may be made accessible to the user via standard SQL queries for analysis and  
3 reporting purposes.

- 4 161. Primary elements of the invention may be server-based and may reside on  
5 hardware supporting an operating system such as Microsoft Windows  
6 NT/2000™ or UNIX. Clients may include a PC that supports Apple Macintosh  
7 ™, Microsoft Windows 95/98/NT/ME/2000™, a UNIX Motif workstation  
8 platform, or other computer capable of TCP/IP or other network-based  
9 interaction. In one embodiment, no software other than a web browser may be  
10 required on the client platform.
- 11 162. Alternatively, the aforesaid functional components may be embodied by a  
12 plurality of separate computer processes (e.g. generated via dBase™, Xbase  
13 ™, MS Access™ or other "flat file" type database management systems or  
14 products) running on IBM-type, Intel Pentium™ or RISC microprocessor-based  
15 personal computers networked together via conventional networking hardware  
16 and software and including such other additional conventional hardware and  
17 software as may be necessary to permit these functional components to  
18 achieve the stated functionalities. In this alternative configuration, since such  
19 personal computers typically may be unable to run full-scale relational database  
20 engines of the types presented above, a non-relational flat file "table" (not  
21 shown) may be included in at least one of the networked personal computers to  
22 represent at least portions of data stored by a system according to the present  
23 invention. These personal computers may run the Unix, Microsoft Windows  
24 NT/2000™ or Windows 95/98/ME™ operating systems. The aforesaid  
25 functional components of a system according to the present invention may also  
26 comprise a combination of the above two configurations (e.g. by computer  
27 program processes running on a combination of personal computers, RISC  
28 systems, mainframes, symmetric or parallel computer systems, and/or other  
29 appropriate hardware and software, networked together via appropriate wide-  
30 and local-area network hardware and software).

- 1       163. A system according to the present invention may also be part of a larger  
2       computerized financial transaction system comprising multi-database or multi-  
3       computer systems or "warehouses" wherein other data types, processing  
4       systems (e.g. transaction, financial, administrative, statistical, data extracting  
5       and auditing, data transmission/reception, and/or accounting support and  
6       service systems), and/or storage methodologies may be used in conjunction  
7       with those of the present invention to achieve an overall information  
8       management, processing, storage, search, statistical and retrieval solution for a  
9       particular lock box service provider, e-payment warehouser, biller organization,  
10      financial institution, payment system, commercial bank, and/or for a cooperative  
11      or network of such systems.
- 12     164. In one embodiment, source code may be written in an object-oriented  
13      programming language using relational databases. Such an embodiment may  
14      include the use of programming languages such as C++. Other programming  
15      languages which may be used in constructing a system according to the  
16      present invention include Java, HTML, Perl, UNIX shell scripting, assembly  
17      language, Fortran, Pascal, Visual Basic, and QuickBasic. Those skilled in the  
18      art will recognize that the present invention may be implemented in hardware,  
19      software, or a combination of hardware and software.
- 20     165. The translation or mapping of EDI-type financial data, particularly of the X12,  
21      UN/EDIFACT, and NACHA formats, as discussed herein, is provided herein  
22      only as an example of transaction data capable of interacting with the invention  
23      and should not be construed so as to limit the use of the invention solely in such  
24      a setting. While the discussion herein presumes the use of the invention with  
25      respect to EDI, transactional, or financial data, it is anticipated that the invention  
26      may have utility in other contexts, as well.
- 27     166. Payment options such as ACH debits, credit or procurement card payments,  
28      and/or paper checks may be provided. For ACH debits, a 24 hour settlement  
29      window may be required, in which case the payment must be sent to the  
30      receiving financial institution 24 hours prior to the settlement date specified by

the payer system user. If an ACH debit fails, an ACH return file may be sent from the financial institution, in which case the file is loaded and each transaction may be matched against invoices with the status of paid. When there is a match, the invoice in question may be reopened and rolled back to the status of "verified". Paper checks may be generated internally or by an external software module, wherein an output file in a format capable of being read by the external module may be generated. Payment by a payer system user using a credit or procurement card may also be effected, to be processed by internet or other means. In this scenario, additional security levels may be included, e.g., for initiating credit card payments (along with a dollar amount limit) and approving credit card payments, and such appropriate credit card payment processing functionality as may be appropriate may be included, as well.

167. It should also be appreciated from the outset that one or more of the functional components may alternatively be constructed out of custom, dedicated electronic hardware and/or software, without departing from the present invention. Thus, the present invention is intended to cover all such alternatives, modifications, and equivalents as may be included within the spirit and broad scope of the invention as defined only by the hereinafter appended claims.
168. It should be recognized by those skilled in the art that the present invention may have utility in contexts other than invoice payment, and that the parties to transactions handled by the invention may be entities other than payers and billers/payees in a vendor/vendee context. For example, the invention may be used in bank-to-bank transactions, bank-to-consumer transactions, consumer-to-consumer transactions, and any other financial transactional setting.
169. Exemplary message definitions and corresponding business objects in one embodiment of the invention are listed in the table below along with a brief description of the functions performed by each, wherein exemplary business objects include AccountMgr, Adjustment, Agreement, Audit, ErrorHandler,

- 1      FileExport, FinInstMgr, GetFinTrans, GetInvoices, GetPayments, HolidayMgr,  
 2      InvoiceInfo, LoginManager, MsgManager, and MsgUtils:

<u>Message</u>	<u>Business Object</u>	<u>Description</u>
AddAccount	AccountMgr	Adds account to a given financial institution.
DeleteAccount	AccountMgr	Delete account(s) from financial institution.
GetAccountFinInst	AccountMgr	Retrieves financial institution according to account ID.
UpdateAccount	AccountMgr	Update a financial institution's account information.
AssignBillerAdjustmentCodeList	Adjustment	Take in either a list of Adjustment Code Ids or a set of AssignBillerAdjustmentCode messages and add the whole list to the biller ID provided
RemoveBillerAdjustmentCodeList	Adjustment	Take in either a list of Biller Adjustment Code Ids or a set of RemoveBillerAdjustmentCode messages and remove the whole list from the biller ID provided
AssignPayerAdjustmentCodeList	Adjustment	Take in either a list of Adjustment Code Ids or a set of AssignPayerAdjustmentCode messages and add the whole list to the payer ID provided
RemovePayerAdjustmentCodeList	Adjustment	Take in either a list of Payer Adjustment Code Ids or a set of RemovePayerAdjustmentCode messages and remove the whole list from the payer ID provided
GetPayerAdjustmentCodeList	Adjustment	Return a PayerAdjustmentCodeList of all codes assigned to the payer for a given biller
GetAdjustmentCodeList	Adjustment	Return an AdjustmentCodeList of all codes that are non-biller specific
AddAdjustmentCode	Adjustment	Add a new adjustment code
DeleteAdjustmentCode	Adjustment	Delete an existing adjustment code. Does not check to see if assigned anywhere else, does not update biller/payer adjustment code tables
UpdateAdjustmentCode	Adjustment	Update an adjustment code specified by ID
GetGeneralAdjustmentList	Adjustment	Get a GeneralAdjustmentList of all general adjustments for the given Invoice ID
AddGeneralAdjustment	Adjustment	Add a general adjustment for a given invoice ID, update the agreement counters, and mark the invoice as having been adjusted
UpdateGeneralAdjustment	Adjustment	Update a general adjustment for a given invoice ID, update the agreement counters, and mark the invoice as having been adjusted
DeleteGeneralAdjustment	Adjustment	Delete a general adjustment for a given invoice ID, update the agreement counters, and check if there are still adjustments for this

		invoice, else unmark the invoice as having been adjusted
GetLineItemAdjustmentList	Adjustment	Get a LineItemAdjustmentList for a given LineItemDetail
AddLineItemAdjustment	Adjustment	Add a new LineItemAdjustment to the given LineItemDetail by the ID provided and update the agreement counters and the grossAdjustedTotal amount and the adjusted flag on the invoice
DeleteLineItemAdjustment	Adjustment	Delete a LineItemAdjustment from the given LineItemDetail by the ID provided and update the agreement counters and the grossAdjustedTotal amount and the adjusted flag on the invoice
UpdateLineItemAdjustment	Adjustment	Update a LineItemAdjustment for the given LineItemDetail by the ID provided and update the agreement counters and the grossAdjustedTotal amount and the adjusted flag on the invoice
AssignPayerAdjustmentCode	Adjustment	Assign an AdjustmentCode to the given payer Id while also providing the biller ID
RemovePayerAdjustmentCode	Adjustment	Remove an adjustment code from a payer using the given PayerAdjustmentCode ID
GetBillerAdjustmentCodeList	Adjustment	Get a BillerAdjustmentCodeList by the provided biller ID
AssignBillerAdjustmentCode	Adjustment	Assign / Create an adjustment code for a biller. If an adjustment code is provided, it is assumed to be accurate and the relation is set up in the BillerAdjustmentCode table. If there is no adjustment code ID provided, the info for creating one can be provided for a biller-specific adjustment code and it will establish the relation in BillerAdjustmentCode and the entry in AdjustmentCode
RemoveBillerAdjustmentCode	Adjustment	Remove an adjustment code from a biller. If it is a biller-specific code, also remove it from the AdjustmentCode table
UpdateBillerAdjustmentCode	Adjustment	Update the values in an existing BillerAdjustmentCode
DisplayAdjCode	Adjustment	Get adjustment codes for any biller or agreement
AddAgreement	Agreement	Add an agreement for a biller and payer ID combo to the system. Must have a biller ID, payer ID, customer number, and biller number
DeleteAgreement	Agreement	Remove an agreement for a biller and a payer from the system
UpdateAgreement	Agreement	Update the values in an agreement
GetPayersForBillerNumber	Agreement	Get all of the Payers with agreements for this biller number
GetNonPayersForBillerNumber	Agreement	Get all of the Payers who do not have agreements with this biller number
GetPayersForBillerID	Agreement	Get all of the Payers with agreements for this biller ID
GetNonPayersForBillerID	Agreement	Get all of the Payers who do not have agreements with this biller ID
GetBillersForPayerID	Agreement	Get all of the Billers with agreements for this payer ID
GetNonBillersForPayerID	Agreement	Get all of the Billers who do not have agreements with this payer ID
DeleteAgreementList	Agreement	Remove the agreements for the list of agreement IDs provided
GetAgreementList	Agreement	Get agreement list based on any filter
GetPayerAgreementList	Agreement	Returns InvoiceReviewUI Entity with payer and agreement info

GetBillerAgreementList	Agreement	Returns InvoiceReviewUI Entity with biller and agreement info
AddAuditMsgBulk	Audit	Takes a list of audit messages and inserts them into the database. Note audit messages can be of type: GENERAL, SYSTEM, SECURITY.
AddAuditMsg	Audit	Adds an audit message to the database. Note audit messages can be of type: GENERAL, SYSTEM, SECURITY.
DeleteAuditMsg	Audit	Deletes an audit message from the database.
GetAuditMsgList	Audit	Gets a list of audit messages from the database
PostErrorMsg	ErrorHandler	Post an error message via the Selector.
PostError	ErrorHandler	Posts an error message directly, without a call through the Selector. The function uses ADO to access the database, instead of the standard engine calls.
ExportUnapprovedInvoicesToCSVFile	FileExport	Exports a list of unapproved invoices to character delimited file format.
ExportUnauthorizedPaymentsToCSVFile	FileExport	Exports a list of unauthorized payments to a character delimited file format.
ExportUnapprovedInvoicesToXMLFile	FileExport	Exports a list of unapproved invoices to an XML file.
ExportUnauthorizedPaymentsToXMLFile	FileExport	Exports a list of unauthorized payments to an XML file.
AddFinInst	FinInstMgr	Adds a financial institution to the system.
DeleteFinInst	FinInstMgr	Deletes a financial institution from the system.
UpdateFinInst	FinInstMgr	Updates a financial institution.
GetFinInstList	FinInstMgr	Retrieves a financial institution list for a given biller, or payer.
DisplayAccount	FinInstMgr	Get account lists for any filter
DisplayBankList	FinInstMgr	Get current bank info
GetFinTranList	GetFinTrans	Get a FinTranList. Can either provide where and orderby info or a list

		of FinTran Ids
GetFinTran	GetFinTrans	Get a specific FinTran by ID
GetFinTranReviewList	GetFinTrans	A light UI based method for getting FinTrans with a single invoice and payment
GetInvoiceList	GetInvoices	Get an InvoiceList. Can either provide where and orderby info or a list of Invoice Ids
GetInvoicesForPayment	GetInvoices	Get an InvoiceReviewUIList for a given paymentId
GetInvoiceHistory	GetInvoices	Get a FinTranList for payments which were batched more than 60 days ago, then display the invoices for them
GetInvoiceReviewList	GetInvoices	Get a InvoiceReviewUIList. Can either provide where and orderby info or a list of Invoice Ids
GetInvoice	GetInvoices	Get a specific Invoice by ID
GetPaymentReviewList	GetPayments	Get a PaymentReviewUIList. Can either provide where and orderby info or a list of Payment Ids
GetPaymentList	GetPayments	Get a FinTranList. Can either provide where and orderby info or a list of Payment IDs. Used FinTranList so Xpath filter could work against any criteria under it
GetPaymentHistory	GetPayments	Get a FinTranList for payments which were batched more than 60 days ago, then display the payments for them
AddHoliday	HolidayMgr	Adds a holiday to a specified financial institution.
UpdateHoliday	HolidayMgr	Updates a holiday entry in the database with new information.
DeleteHoliday	HolidayMgr	Removes a holiday from a financial institution.
GetHolidayList	HolidayMgr	Gets a list of holidays for a given financial institution.
ValidateSettlementDate2	HolidayMgr	This function can be called directly from any component without the Selector. It takes a date, and a financial institution ID. If the date is a holiday or a weekend then the next possible workday is returned. Otherwise the original date is returned in string form.
ValidateSettlementDate	HolidayMgr	If the date is a holiday or a weekend then the next possible workday is returned. Otherwise the original date is returned in the XML message parameter.
GetInvoiceCountsForUser	InvoiceInfo	Get invoice counts for the following: Invoices due today, Invoices due tomorrow, Invoices that lose discount today, Invoices that lose discount tomorrow, and Invoices that are past due. Uses the stored proc GetInvoiceInfo and passes back the counts and the Xpath to select the data set which is placed in the payer front screen hyperlinks for the counts
GetInvoiceStatusList	InvoiceInfo	Get the InvoiceStatus change entries for a given Invoice ID
AddInvoiceStatus	InvoiceInfo	Add a new InvoiceStatus record for an invoice ID

Login	LoginManager	Logs a user into the system, passing it a user name, and password. The user will be authenticated against his/her domain credentials as well as the NetTransact database information.
Logoff	LoginManager	User logs off according to his/her session ID. A session ID is needed as part of the formal message command.
DispatchMsg	MsgManager	Dispatches a message to the selector. If session information is needed, then the parameters in the original message body are filled in.
GetPayerBillerAdjustmentCodesWithAssigned	MsgUtils	Get a BillerAdjustmentCodeList for the biller supplied, match the PayerAdjustmentCodes for the payer supplied to the BillerAdjustmentCodes and set the assigned attribute on the BillerAdjustmentCodeList where there is a match. Gives a single list for what biller adjustment codes are available and which have been assigned to the payer
GetPayerAdjustmentCodesWithAssigned	MsgUtils	Get all AdjustmentCodes in an AdjustmentCodeList and match the PayerAdjustmentCodes for the payer supplied to the AdjustmentCodes and set the assigned attribute on the AdjustmentCodeList where there is a match. Gives a single list for what adjustment codes are available and which have been assigned to the payer
GetBillerAdjustmentCodesWithAssigned	MsgUtils	Get all AdjustmentCodes in an AdjustmentCodeList and match the BillerAdjustmentCodes for the biller supplied to the AdjustmentCodes and set the assigned attribute on the AdjustmentCodeList where there is a match. Gives a single list for what adjustment codes are available and which have been assigned to the biller

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